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Volume II: Issue 5: Price £2.50

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Deviation**

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Q MATHS
**Algebraic
Processor**

JDIR

**Transfer
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ISSN 0951-9335



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THE FANTASTIC SPECIAL EDITION OF LIGHTNING

The Program for Everyone

If you are using a QL in any shape or form or with any accessory (thus including the new QXL 68040, Gold Card, Trump Card, ST/QL, Thor, PC CONQUEROR, Minerva, TURBO, and even the humble unexpanded microdrive-only QL), you really should be using **LIGHTNING SPECIAL EDITION**. If not, you are very severely and unnecessarily (our program is quite inexpensive) slugging your system's performance. The superb **LIGHTNING SPECIAL EDITION** will both automatically and very significantly accelerate almost every aspect of QL operation - whatever it is you use the QL for. **"More than 10x is achievable and 2x-4x is typical"** (quote from page 24 of review in April '90 QL World). The speedup ratio is independent of the system. However fast or slow your hardware, **LIGHTNING SPECIAL EDITION** will accelerate it much further. All recent versions of our software are carefully optimised for 16/32 bit processors, without compromising 8 bit working. The program has not got any adverse side effects at all, and it fixes QL anomalies. Installing it is a fast, once-only operation that takes two or three minutes and which assumes & requires absolutely no knowledge of programming or of anything even remotely technical about the QL: you are simply asked whether you wish to speed up text, maths and graphics individually, or **everything**. Unless you have a very good reason, opt for everything! Then **LIGHTNING SPECIAL EDITION** copies itself onto your boot-up disks, instantly modifying their boot files. Now every time you start up, full throughput acceleration is automatically invoked and everything goes much smoother and faster. In case you think that this is too good to be true, we quote verbatim the concluding para of the Sinclair QL World review: **"I could not fault LIGHTNING SPECIAL EDITION on anything. It is a clear winner and a best buy at £49.95"**. The program includes a bundle of accessories (change fonts

etc. in Quill etc., smooth scrolling and much more) and tweaks (vary maths and/or graphics precision, a null device and much more). Stop reading the manual where we tell you to - at around page four - if simple use is all that you want. The program also includes 84 excellent small fonts for use with both **PERFECTION SPECIAL EDITION** and **PROFESSIONAL PUBLISHER**: a real bonus!

LIGHTNING SPECIAL EDITION includes both a ROM (for plugging in at the back of your QL - no screwdriver needed) and a disk. As some QL hardware (QXL; Gold Card for speed reasons) is not ROM-friendly, or you might have something already plugged in (ICE, TK2 if not already on your disk interface), you can get a version of the program minus the ROM for just **£39.95**: this is the **GOLD CARD VERSION**. If you have two QLs, say one of them a QXL / Gold Card and one "ordinary", you should go for the full **LIGHTNING SPECIAL EDITION**, as you can use the ROM on the second machine. Extra ROMs cost £10 if ordered at the same time as the program, else £15.

Q1) What programs benefit from LIGHTNING SPECIAL EDITION (LNGSE)? A) All, including emulators. Perhaps **PERFECTION SE** benefits most. **Q2) Why didn't you build it into all your programs?** A) It would be very inefficient to do so because of multitasking. Also, LNGSE benefits all programs (even Quill etc.), not just our ones. **Q3) Does the QL "know" it is running LNGSE?** A) No. And it isn't "running" LNGSE either. In its first and only second of life LNGSE pages out, using a door deliberately left open by the QL's forward-thinking designer, large chunks of QDOS (AH, JM, JS, MG and all Minerva operating system variants) and replaces them with our fine-tuned supercode. **Q4) Is it a compiler?** A) No - **TURBO** is. LNGSE greatly improves the performance of **TURBO**'d programs too! **Q5) Why is LNGSE so cheap?** (happy users ask this) A) The truth is, we know that once you have experienced **LIGHTNING SPECIAL EDITION**, you won't abandon your QL. As **THE QL** software publisher, that is rather good news for us. **Q6) Give me one more reason for buying it.** A) Look at our **SPECIAL DEALS**, and think. Even before any seasonal discount, LNGSE Gold Card would add a mere £30 to the price of **PERFECTION PLUS SPECIAL EDITION**, for example. **SPECIAL DEALS** allow you to get programs for free, even to get us to pay you to buy them...

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PERFECTION SPECIAL EDITION

AN EXCITING NEW DEVELOPMENT - Version 5!

In the case of many word-processing objectives, the best way to implement them is pretty clear. There are some areas, however, where individual tastes and preferences can differ very widely. One such area is the reformatting of text - the adjustment of previously entered text to conform to margin, indentation, justification and pagination settings after you go back (or forward!) to it and make alterations, either by hand (by typing and/or deleting) or by using individual or global search and replace. When new text is being entered at the foot of the document or at the end of the current paragraph, all word-processors behave virtually identically, obeying the current settings - it is in the matter of amending existing text (inserting, changing or deleting) where conflicting philosophies apply. Text-handlers differ in their treatment of this: Editor, Wordperfect, text⁸⁷, Quill, AmiPro & Word all behave differently.

Editor, Spy, most versions of Wordstar, and all technical editors leave all reformatting to you. While at first this may seem harsh, this manual mode gives you a lot of control, makes the handling of tables and other technical applications better (do you really want to reformat that BASIC program into a single paragraph?!?), and is easy on the eye. But you must remember to reformat as the program won't, and this may be an annoyance. If you move away and forget to clean up, your printout will probably be incorrect.

Wordperfect will auto-reformat, but generally only when you move the cursor from the line containing the change. Changes you make while your cursor is within the line will only cause the line to contract or expand up to the margin. This too is easy on the eye, but there is the drawback that the overall picture of the page may be inaccurate while you are inserting or amending text, and that when you move the cursor away (and hence trigger the auto-reformat), you may not notice any undesirable effects caused (e.g. widows, orphans, inappropriately positioned page or line breaks).

QL Quill auto-reformats, but because of its slowness it uses a trick: often when you start inserting within the middle of a paragraph, Quill splits the para in two and creates temporary blank lines to separate the parts. This means Quill does not need to reformat until you have finished amending. What you type appears at the end of the first part of the paragraph. This has the advantage and disadvantages of the Wordperfect method, but additionally the split can be a bit disconcerting and the screen display can be grossly wrong during the editing. Also, we know of a bug that causes a line to be shown twice on the Quill screen while it is only really present once: you will regret it if you delete the apparent duplicate as an unduplicated line will get deleted without warning.

Word (a fine PC Windows program) auto-reformats in situ, in real time, as-you-type. But if you have a long complex para and you are editing near the top of it, you may notice the time taken for the reformat *even on a 486/66MHz* (QL users should note that this is >20 times faster than a Gold Card i.e. about the speed we expect from a *fully tweaked* QXL). Also, cursor movement will appear to some as a bit erratic (which is hard on the eye) especially if right justification is on or if the on-screen fonts are proportional. It can also be quite distracting to keep seeing the ripple effect of changes as text on lower lines is reformatted. AmiPro is somewhat better in this respect as there is a small delay (almost a second) before AmiPro refreshes lower lines on the screen: easier on the eye.

The new release of **PERFECTION SPECIAL EDITION**, version 5, gives the user the best of all worlds, by combining the best of all the above methods and avoiding all the drawbacks. The user is given the opportunity both to pre-configure and to adjust at will from inside the program, the desired auto-reformatting behaviour. The options are to either select Never (giving Editor-like action for technical users: this is what all previous versions did, where you had to press a key to get the para to reformat after re-editing it), Instant (giving in-situ real-time automatic reformatting as-you-type, as does Word) or User-delay, the most flexible setting of all

(giving slightly delayed updating of lower lines of text, like AmiPro, but also - and unlike AmiPro - giving you, the user, full control over how long the delay is). No other w.p. is this able.

On User-delay the user is free to set any delay from 0.1 seconds to 99.9 seconds in 0.1 second steps. About 1-2 seconds is best for slow typists, and 1.5 seconds is thus the default. This means that you are not hassled by continuing screen changes on lines below the one you are editing and concentrating upon, or shufflings around on the current line caused by right justification etc. So the Word disadvantage (much more noticeable on slower hardware) is avoided, without recourse to the Quill temporary blank line nuisance. When you pause in your typing for longer than the set delay, **PERFECTION SPECIAL EDITION (SE)** automatically tidies up, without you having to do anything (getting around the Wordperfect and Quill drawback of making you mentally adjust for the screen remaining occasionally out-of-sync with reality).

If you are a reasonably fast typist, you can experiment with shorter delays (say 0.5 seconds). If you are a speed demon, set the delay to 0.1 seconds and see if you can ever manage to "get ahead" of the program! Settings of under 0.3 seconds are indistinguishable from 'Instant', when reformatting always keeps pace.

On the User-delay setting **PERFECTION SE** will, as does Quill and Wordperfect, auto-reformat *instantly* (no matter how long a delay you have set) if you either navigate off the line or invoke **any** menu or direct command (including Save, Export etc.). This means that you are never left with the document "wrong".

There are many other improvements in this release of **PERFECTION SE**. One in a similar area is with SHIFT/CAPS, the one (out of five) manual reformatting commands that allowed reformatting of a para from the current line onwards without affecting previous lines. SHIFT/CAPS will now additionally obey the indent margin (which matters if the cursor is on the first line of the para) and, more significantly, it will leave the cursor position unaltered within the text (previously, it used to move the cursor to the start of the next para). Other reformatting commands are unaltered, so you can still step through paras reformatting easily.

PERFECTION SE v5 costs £99.95, or £139.95 in **PLUS SE** incarnation (i.e. with spellchecker, dictionaries & maintenance programs), less discounts that can total 40%. There is no special upgrade price to v5 for existing **SE** owners - only DP's usual reasonable £10 update charge (but as an offer to **QLR** readers, open for four weeks from the date of publication of this issue, existing **SE** or **PLUS SE** owners can get the upgrade totally free provided they order other DP programs of total value (after all discounts) exceeding £25). To upgrade from the STANDARD version of **PERFECTION** costs, as with all upgrades, the difference in price plus just £10, i.e. £50. The user should not return any documentation, just the one master disk. Remember special deal prices, which give discounts of up to 25% if more than one program is purchased (or upgraded) at the same time (do you have **LIGHTNING SE**?). To get the very best out of **PERFECTION SE**, use it with **PROFESSIONAL PUBLISHER** (and perhaps with attendant **TOOLBOXes** and **FONT ENLARGER**), when you can output text to any number of shapes of any desired complexity (not just boring columns!) throughout maintaining pixel proportional spacing and having thousands of fully WYSIWYG fonts to choose from, whatever your printer....

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OTHER SPECIAL PROGRAMS FROM DP

PC CONQUEROR GOLD SPECIAL EDITION The rave review on pages 16 to 19 of March 1993 QL World really says it all: "an excellent product", "much faster, more compatible and capable than its predecessor". There are many extra features too. You can also get DR-DOS v6.0 (with Netware Lite free), which is the best DOS of all. And if you are buying or have bought this DOS from us, you can buy preconfigured DOS pseudo hard disks (on ED diskette) for £15 each (specify if you want compressed i.e. 6Mb capacity, or 3Mb: or have one of each for £25).

QMATHS MATHEMATICAL SYSTEM PART TWO A superb companion to QMATHS, with maths, stats, Abacus stuff, expression evaluation, terrain plotting, the fastest Mandelbrot routines and much more. Note the special price for 1+2.

TRANSFER UTILITY SPECIAL EDITION Copies and transfers, with optional sorting, case-changing, formatting, statistics and more.

QUICKLASER Superb print output from PRO PUBLISHER to HP Deskjets, Laserjets (the latter with 1Mb of RAM or more) and all compatibles. QUICKLASER costs just £19.95 all inclusive.

LIGHTNING SPECIAL EDITION GOLD CARD VERSION Optimal speed from higher specified QLs - GOLD CARD, QXL, ST/QL, Thor XVI etc. Free upgrade from standard version if you return ROM + disk and are ordering something else at the same time, else £10 charge.

PERFECTION PERFECTION PLUS

Perfection is the finest word processor available for any computer. We have received dozens of letters from happy users saying just this... and all of these letters were unsolicited. "Superb" was used most often.

Perfection manages to achieve all the sophistication of the most complex PC word processors while still using a user interface as friendly as Quill's. Perfection has a dual system of user control: menus while you are familiarising yourself with the program, and direct commands for the time when you feel ready for more adventurous things. The two systems can be used interchangeably and even simultaneously. Even more exciting – both systems are iterative. In case you don't understand what this means, let us give you an example: suppose you wished to move a block of text using the menus. You would choose Block Move (yes, it is right in the first menu) and the screen would then tell you to move your cursor to the start of the block. On most word processors you would have to navigate manually to this position: indeed, on many of them (Quill included) only a subset of the normal navigation commands would be available. On Perfection, not only can you use all the manual navigation commands (viz all 28 permutations of CTRL, ALT, SHIFT and the arrow keys) but in addition you can use direct commands like GoTo Line or Page or any of eight markers. Even more amazingly, you can use Search (either as a direct command or from the menus) even though you are already 'within' a menu option.

Perfection has about 200 commands, but the layout of menus and the choice of keys for the direct commands makes it very easy to master. Though a 100+ page manual is provided (with all the important bits right at the front), you should only need to consult it for specialised operations like macros.

Even if speed is not particularly important to you, we assure you that Perfection's lightning performance will enable you to use the word processor in sensible ways that you would not have dreamed possible before. For example, scrolling 100 pages or so is accomplished so quickly using the normal navigation commands that you do not need to bother using a menu option to do the move. Spellchecking, assuming you have Perfection Plus, is accomplished virtually instantly: to spellcheck this whole ad (all the pages) would take under 1.5 seconds... Searching (you can switch case sensitivity, as well as equivalences between tabs, soft spaces and hard spaces) is at the rate of about 100 A4 pages per second.

Moving from one word processor to another is usually very traumatic. With Perfection, this will not be the case. Not only can Perfection read in Quill .doc and .exp files directly (you do not even need to tell it they are Quill files) but it can make direct and immediate use of your existing Quill printer driver. File re-export is also possible.

Perfection is truly WYSIWYG: this means that bold appears bold on screen, italics appear as italics, underlined as underlined, and so on. Of course, your printer may have functions we do not know about (upside down?). To deal with these, Perfection provides a number of on-screen shaded strips: these can be attached to any printer function you wish, and will not upset justification as a translate would. Of course, translates are provided as well!

A variety of statistics on the document being processed are available: some of them are on view all the time, the rest can be toggled to instantly. Not only is there a word count, but also page, line, character and special character (like Superscript Off) counts. There are also a dozen status indicators, letting you know whether you are in Insert or Overwrite mode, whether a block is defined, whether interactive spellchecking is enabled etc. Current line (from top as well as within page) and column positions and character codes are also available.

A terrific feature of Perfection is the dual screen mode. You can view one part of the document while editing another. The sizes of the two windows are themselves adjustable, both in real-time or via the configurator. We should devote more space to the configurator: however, it must suffice to say that everything that could be dynamically set within Perfection may also be preset with the configurator. The configurator can, for example, allow you to select any of 256 colours for any of a dozen parameters (like paper colour, border colour, status window ink and paper colour etc).

Perfection is fully multitasking without need for any external accessory: however, if you already use QPAC or Taskmaster or similar and are happy, you may go on doing so.

There is absolutely no way that we can prepare you for the quality 'feel' of Perfection. We have a great deal of experience using PC word processors costing many hundreds of pounds: with absolutely no exception, Perfection is far easier to use and master.

So if you thought Perfection was unattainable, you have a very pleasant surprise coming to you!

LIGHTNING SPECIAL EDITION LIGHTNING

These programs accelerate QL operation by up to 10x (2x – 4x is typical) without having any adverse effect whatsoever on compatibility or anything else. Lightning SE is typically 40% faster than the standard version. This acceleration is totally independent of, and in addition to, any speed-up obtained by hardware means. So if you have Gold Card, your need for Lightning SE is just the same as if you had only an unexpanded QL – Lightning SE will accelerate both by the same ratio.

The Lightning programs achieve their acceleration by automatically paging out sections of the QL's operating system and replacing these with optimal, concise code written by us.

Lightning installation is a completely automatic and one-off: no knowledge of computing or programming is required. Once installed, Lightning can be completely forgotten about – you will soon get used to the superb speed! Knob twiddlers are catered for too.

Lightning technology is not built in to any of our other programs. Perfection users (as well as users of all other QL software) should therefore use Lightning all the time.

In summary: if you do not have Lightning, you are wrong. Buy this one FIRST OF ALL!

PROFESSIONAL PUBLISHER

The Professional in Professional Publisher refers to the quality of output from that program, and is not meant to suggest any complexity of operation. Few programs are as easy to use as this one: > 99% of users will be able to do with-

a manual Professional Publisher is by far the best DTP program for the QL. It is fully compatible with Perfection, Editor, Quill, Eye-Q & the ASCII editors. It allows you to both create and import both text and graphics. Text can be 'poured' into boxes of any shape, size and number, automatically maintaining justification and hyphenation settings. So flowing text around graphics is a doddle.

Professional Publisher is supplied with a generous selection of fonts of various sizes, as well as clip art.

Justification is by pixel, not by character. This gives a much smoother effect. It is pointless for us to try to list all of Professional Publisher's features – we would end up filling half the magazine! We will concentrate on just a few 'points': Professional Publisher is extremely precise, performing all its computations accurate to a small fraction of a millimetre. All its features can be preset by you using its configurator, ruling out the need for repetitive key strokes. The program is extraordinarily versatile while remaining intuitive in its user interface. Buy it!

PROFESSIONAL PUBLISHER TOOLBOXES

Toolbox I is an excellent collection of high definition fonts, clip art and utility programs for Professional Publisher. While the fonts supplied with Professional Publisher are excellent, many users will feel the need for a wider range of typefaces and styles.

Toolbox II starts where Toolbox I leaves off, providing an even better – and different – font collection.

The two Toolboxes complement each other and are available together at a special price.

FONT ENLARGER GRAFIX

Font Enlarger does exactly what you would expect it to from its name. While Professional Publisher is also capable of enlarging fonts, it does them 'on the fly' and consequently is not able to remove the jaggedness caused by magnification. Font Enlarger is much cleverer, and enhances detail without any step effect.

While the built-in printer driver for Professional Publisher is excellent with 9-pin printers, it is not optimal with 24-pin or laser printers. Grafix is.

EYE-Q ULTRAPRINT

Eye-Q is the finest graphics program for the QL. While there may be other graphics programs with a few more features, no other program comes anywhere close to Eye-Q in sheer enjoyability. Eye-Q develops a pleasurable tactile relationship with you, and makes you feel like an artist (even if you aren't). Eye-Q graphics can be read in by Professional Publisher, and the latter's pages can be exported to Eye-Q (using Toolbox I). Everything in Eye-Q is menu-driven and there is context-sensitive help.

While Eye-Q has its own printer driver, Ultraprint allows you 22 distinct styles/sizes of printer output. The reasoning is that the scale of gradation suitable for pictures is probably unsuitable for text or line drawings.

PC CONQUEROR SOLUTION

PC Conqueror makes your QL into a PC-compatible machine, automatically. It does this by software means only, so there are no screws to undo or wires to fiddle with. Your QL stays a QL too.

Why, might you ask, should you wish to make your QL into a PC-compatible? The reason is simple: you may wish to run the same programs at home as you do at work. Alternatively, you may wish to tap into the vast storehouse of PC software of every type and description you could imagine.

Using PC Conqueror could not be easier. Just boot up your machine with the PC Conqueror disk in floppy 1 and within 10 seconds your QL will be transformed into a PC that is just waiting to be switched on. From this point on you will do exactly the same as you would if you were running a 'real' PC – this means putting a DOS disk (any version) into one of your drives and pressing a key. If you do not already have legal access to a copy of DOS, we can provide you with one at reasonable cost (see our price list).

PC Conqueror runs as fast as it is possible for a PC emulator to run: we have used all our skills to make it work quickly. Of course, you can make the emulation must faster by using Gold Card and Lightning SE. With this combination, you should get speed noticeably better than that of a PC XT...

PC Conqueror allows you to fine-tune the operating environment of the PC in order to improve performance. If you get a hard disk or other high capacity floppy system, you can utilise part or all of it as a PC hard disk.

PC Conqueror occupies under 80K and leaves 667K free for DOS when run on a Trump Card. This is more than you will get on a 'real' PC.

Solution does what Conqueror does but is about half as fast and is not quite as compatible.

SPELLCHECKER MEGA DICTIONARY

Spellchecker is what makes Perfection into Perfection Plus. We have made it available as a separate item for two reasons: (a) to allow Perfection owners to add it later (b) to allow users of other word processors to benefit from the very best in spellchecking technology.

Spellchecker is supplied complete with three dictionaries of differing sizes as well as a system for building, reviewing and maintaining user dictionaries.

Spellchecker's ultimate accessory is the Mega Dictionary, which gives the user a vocabulary of over 350,000 words!

3D PRECISION CAD SYSTEM

This program allows you to manipulate shapes and figures in 2D and 3D at a speed that will leave you breathless. Irrespective of whether your interest is in CAD, in animation or in just having fun, this program should not be missed. You can output to plotters directly from it, or alternatively create graphics screens to be manipulated and output by Eye-Q, Ultraprint or Professional Publisher.

SUPER SPRITE GENERATOR

SSG moves things about the screen very fast and very smoothly, without flicker. Sprites can have up to 16 frames.

MEDIA MANAGER SPECIAL EDITION MEDIA MANAGER

Media Manager Special Edition (MMSE) is a program to be used both when things have gone wrong as well as when things are perfectly OK. It allows for automatic, semi-automatic and manual correction of a huge variety of disk and tape problems. It allows you to explore disks and tapes to your heart's content, producing all sorts of different diagnostic reports. MMSE is very simple to operate, being menu-driven and assuming no degree of computer knowledge whatsoever.

MMSE also allows you to tidy, catalogue, sort and order your disks and cartridges.

The standard Media Manager is both less powerful and less user-friendly, but manages to work on an unexpanded QL.

Both programs allow for data transfer between PC and QL. With MMSE, this transfer is at file and directory level, is bi-directional and is completely automatic.

SPECIAL DESKTOP PUBLISHER DESKTOP PUBLISHER

These programs are quite primitive compared to Professional Publisher. However, if you have not experienced that program as yet, you will find both of these very competent. Both are capable of producing excellent results. The cheaper one has fewer features but is able to run on smaller systems.

EDITOR SPECIAL EDITION THE EDITOR

With the sole exception of Perfection, this is the best word handling system on the QL. Editor's features include an unrivalled degree of programmability and the ability to cope with the entire 256 character ASCII set. The Special Edition has enhanced document-type facilities, including column blocks and on-screen page break displays. Neither program is suitable for computing novices. Until Perfection, Editor Special Edition would have been our 'Desert Island Program'.

Editor SE can do a few things that Perfection can't, so the ideal combination is to have both (they are compatible at file level and can multitask). If you order Editor SE at the same time as Perfection, you can have Editor SE at half price.

PROFESSIONAL ASTROLOGER PROFESSIONAL ASTRONOMER

The Astrologer program teaches you Astrology from scratch and enables you to automatically produce text narrative on personality delineation, year-to-year and minute-to-minute life predictions, compatibility interpretations and so on. Whether or not you believe in astrology – indeed, especially if you do not – this program is one that you cannot afford to have. You can tailor the readouts (both in terms of quantity and what is said) to your own particular requirements. The amount of fun you can have with this program is endless. Do not blame us if you start believing in astrology, though!

Astronomer is an extremely fast and accurate solar system calculator, with planetarium views, planet faces, eclipses, cinerama display etc..

TURBO BASIC COMPILER

Turbo is the finest BASIC compiler for the QL and arguably the finest BASIC compiler for any computer!

Turbo automatically converts working BASIC programs into optimised machine code, usually with no need for human intervention. The benefits of this conversion are vastly enhanced running speed (as well as much faster loading, encryption and automatic bug fixing for a variety of QL interpreter oddities). Typical speed-up is 40x – 100x.

Turbo is provided with a 200 command toolkit, adding many useful commands to BASIC. Most of these commands will be of immediate use to the programmer, whether he is a novice or an expert. There are commands to load strings and floats into RAM, and to extract them automatically; to search memory and to move its contents; to control jobs and change their priorities, manage pipes, allocate and deallocate memory, to control both rubber and virtual arrays, to present INPUT with an editable default, to have random access to files and much more.

TOOLKIT III

Toolkit III starts where Toolkit II stopped, adding about 60 new commands and enhancing many existing dual functions. Toolkit III is available either on disk or on ROM, and works whether or not you have Toolkit II.

Toolkit III commands can, with only a couple of exceptions, be compiled using Turbo.

QFLICK CARD INDEX

All QL owners have a copy of Archive, supplied free with the QL. While Archive is competent, it is very hard to get to grips with and is not particularly fast. QFlick presents a very convenient alternative – a snappy, simple-to-use, pointer-controlled card file database. You can move data between QFlick and Archive in either direction.

QFlick is not itself programmable but we document its data structure and give guidance on how to program it using Turbo.

ARCHDEV + RTM DATABASE ANALYSER ARCHIVE TUTORIAL NAMES + ADDRESSES MAILMERGE DAT-APPOINT SEdit SCREENPRINT RECOVER

This suite of utilities will greatly enhance your use of the Archive database system.

Archdev + RTM is a straight replacement for Archive: It gives enhanced speed, greater workspace and a much cleaner boot-up. All your existing applications will work.

Database Analyser provides very fast and comprehensive statistics about your Archive databases.

Archive Tutorial proceeds systematically through the whole philosophy and grammar of Archive, providing you with expert and patient guidance.

Names + addresses, Mailmerge and Dat-Appointment are ready-to-run, off-the-shelf Archive applications, providing an address database, mailmerging and appointment diary respectively. You now have no excuse not to use Archive.

SEdit allows you to create and edit screen format files in Archive. Screenprint allows you to print them out.

Recover allows you to get back lost Archive databases, created when you switched off the computer without properly exiting from Archive.

XREF SUPERBASIC MONITOR BETTERBASIC EXPERT SYSTEM

XRef analyses the structure of a BASIC program, providing detailed reports on things like variable usage, what calls what, dynamic call hierarchy of procedures and functions, and so on.

SuperBasic monitor actually monitors and reports on the performance of BASIC programs as they run under the interpreter.

BetterBasic analyses and automatically corrects structural flaws in your programs and allows you to customise things like indentation, number of statements per line, filtering out of noise words, etc.

The three programs together provide a matchless diagnostic and auto-correcting facility for BASIC programs.

TRANSFER UTILITY

This program copies files at high speed between devices, performing translates as it goes along. Ideal for all sorts of applications, including transfers from microdrive to disk.

QMATHS SYSTEM

This is an incredible mathematical compendium for the QL. Pride of place goes to the symbolic problem solver: this can solve equations, simplify expressions, factorise, expand, etc, all symbolically. If you could sneak this one into a maths examination, you would have a formidable ally. QMaths knows about all the algebraic operators, powers, roots, brackets, trigonometry, matrices, determinants, vectors, factorials, permutations, combinations, binomials, exponentials, logarithms, hyperbolics, inverse functions, infinite series including Taylor & Maclaurin expansions, complex numbers, conversions, Fourier series, and lots of calculus: both differential and integral, including integration by parts and definite integrals. QMaths optionally displays its workings and comes with a superb interactive tutorial.

The package also contains an Interpretive, fractal, image-generating language with loads of beautiful fractal programs supplied for you to use and edit – no programming skill is required.

There is also a multiple precision floating point maths package, giving calculations at precisions up to over 600 decimal digits of accuracy.

There is even more to this system, but we think we have told you enough.

QMON MACHINE CODE MONITOR

The latest version of Tony Tebby's superb monitor: an absolute must for those who really want to know what is going on in the QL. No other machine code monitor even comes close.

Do not confuse this program with SuperBasic monitor, which monitors SuperBasic, not machine code.

COMPARE

This program compares files – data or program – at colossal speed. Where a mismatch is detected, the relevant areas are highlighted and you can shuffle, displace and align very easily.

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Cash trader with Analyser is an accounts system designed by businessmen and not by wretched accountants! Consequently, it has excellent reporting and management facilities, and is very flexible. It is aimed primarily at the layman, probably a sole trader running a small or medium sized business. All the features you would expect – including audit trail – are present.

Payroll is a reasonably flexible system designed to automate the payroll function in small businesses.

Both programs are configurable, with editable defaults letting you adapt the programs from year to year.

HARDBACK WITH FINDER

This is the ultimate hard disk backup and management utility, with all the sophisticated features you could want. User dialogue is via overlapping pop-up windows – the whole program just feels right. It is possible to scan the disk at great speed, too.

DISKTOOL WITH QUICKDISK

This permits you to add password protection to disks, to optionally increase disk storage capacity on DSDD drives by 36K and to increase speed of access by as much as 30%. All this is done while maintaining full compatibility. Automatic file management is also provided.

DIGITAL C SPECIAL EDITION DIGITAL C

These are extremely fast and efficient C compilers, complying with and surpassing the Small C definition. The Special Edition goes much further, including support for structures, pointers, long pointers, >64K code size, direct access to QDOS traps, etc. The Special Edition C generates code that runs about twice as fast as the other.

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A brand new CPORT system, enabling you to rapidly convert your SuperBASIC programs into C (ANSI or Lattice). The new (October 1992) version is now as close to being fully automatic as makes no difference – you must get it!

Owners of our earlier CPORT versions should return disk + SAE for a free upgrade.

SUPERFORTH COMPILER WITH REVERSI

Forth is the most logical computer language. This compiler produces multitasking code. The manual teaches you Forth-83 from scratch.

IDIS SPECIAL EDITION IDIS

These Intelligent disassemblers make the otherwise terrifyingly complex task of understanding other people's machine code programs absurdly easy. The SE version, which has a higher hardware requirement, sorts out some routines, replaces addresses with names, untangles data from code and much more.

QKICK FRONT END SYSTEM

This is a simple, easy-to-master, pull-down menu controlled multitasking front end. QKick runs in the background and can be called up at any time. It provides you with notepads, sophisticated file/sector/RAM handling, backing up facilities, a clock, diary, calculator, mini-database and so on.

ADVENTURE CREATION TOOL SPECIAL EDITION

ACT is a must for every programmer. The name of the program is misleading, insofar as it has capabilities far beyond the 'mere' creation of adventures. ACT has utilities providing animated graphics, data compression, language design, parsing, maps, object-oriented control etc. If all you want to do is generate adventures, though, you do not need to be a programmer to use it. This is a purchase you will never regret.

PEDIT

A fast, modern and capable printer driver for the programs bundled with the QL.

MICROBRIDGE

Superb contract bridge bidder (ACOL etc) and player, using millions of random but reconstructable hands. Microbridge also includes a state of the art interactive bidding tutor and a clear instruction manual. There is nothing like this anywhere else!

SUPER ASTROLOGER

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SUCCESS CP/M EMULATOR

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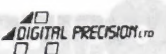
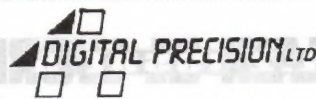
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TROUBLE SHOOTER

Memory hogs, screen size and rom swapping with Bryan Davies.

Time to clear out a few items that have been sitting, awaiting attention, for some time. My mention, in the January issue, of the way Quill (and other Psion programs) hog memory prompted a response from Ray Dent, who sent in the code he uses for handling these programs. This is the Taskforce routine, from DIY Toolkit in April 1989, and is available as part of Simon Goodwin's DIY Toolkit Disk J (see QL Scene for current ordering details). (Please note that the DIY Toolkit disks are NOT Public Domain. CGH Services, handled them happily until it left the QL market, had a long list of copyright programs, which are still copyright, usually to their original authors Editor.)

This routine is clearly rather more than a method of

restricting the space taken by Quill. Dent remarks that "It seems to slow up a bit if you have more than five or so programs running". That should not worry most users much.

Ramdisks

Richard Kettlewell wrote from Cambridge University on the same subject. Firstly, he suggested formatting a fixed-size ramdisk, to keep Quill from stealing that amount of space, but my experience trying that was negative, in so far as subsequent attempts to get the space back (on a Trump Card-equipped system) failed because all free space is put into RAM disk(s) and attempting to reduce the size of one simply puts the space into another. This is because the type of disk is dynamic; there is no problem with the static type. As an alternative, he suggested dimensioning a large array initially, starting Quill, then going back to SuperBasic and using CLEAR to free the array space up. You would need to have modified Quill so that it works from the EXEC command, rather than EXEC_W, to be able to do this.

Talking about arrays is surely going above the heads of most users, though. As with the ramdisk approach, it is perhaps unsuitable simply because more knowledge is required, to achieve the desired result, than the typical user will have. Richard mentioned the use of the QRam/QPac HOT_REXT and EXEP as another way of dealing with Quill, and suggested they will become "increasingly necessary for the most up-to-date software". To some extent, I agree; undoubtedly, there has been more mention of QPac in my (personal) mail recently, and the trumpeting of the Windows GUI on PCs may have a rub-off effect on the QL scene, but the problem with QPac is that the cure tends to be worse than the ailment. It is - to put it very mildly - not easy to understand how to set it up.

Quill users do not strike me as wanting to plough through pages written in some weird language; they are likely to want something straightforward, and written in plain English.

Exclusive!

Richard had some other interesting comments to make. One was that the main storage of the university computer seems to work with 42 KB sectors. As he says "efficient or what?". We think in terms of 512-byte sectors, or maybe even 1 KB sectors, but what can you store if the minimum unit is 42 KB? He wonders about some things that never seem to make it into QL World, such as Tony Tebby's SMS-2 operating system, as used (I think) on the Atari QL emulator, and file compression/decompression programs (eg Arc). We would print information on such matters, Richard, if the writers/suppliers gave us something above the level of hints. *(I spoke with someone who was working with a forerunner of SMS-2 some time back. He asked me not to print anything because they didn't know how it was going to be applied. That was two years ago. SMS2 itself has not impinged on mainstream QL use until this very month, when it appears on the scene in its latest incarnation, the appropriately-named SMSQ, as the operating system for the Miracle Systems QXL board. Ed.)* They either are not interested in publicity or perhaps feel public magazines "aren't their scene", which may sound rather strange to readers. QL World keeps space for program users, as opposed to those whose main interest is programming itself, but program writers seem to be interested only in other programmers. This attitude has, of course, been a major influence in the relative lack of commercial success of the QL (compare it with the Amstrad PCW, which is very much a users' computer, of which both the early as well as current models are still very popular). To complete his letting-off of steam, Richard commented on the ANSI-compliant status of C68, which he thinks is far from compliant. "It is a K&R compiler with a few ANSI-like extensions, the most important of which share ANSI syntax but have totally different semantics." Well, it's the first time I've heard that point of view.

Screen width

On a separate subject, Ray

Dent asked if it is common for the cursor and the first character (on the command line) to be lost off the left of the screen, with a Microvitec Cub display. As the same thing has been happening on my Cub recently, the question prompted me to look back on notes about the Cub, to see where the adjustment controls are. On the main PCB inside the display unit, roughly a third of the way down the left side as viewed from the front, there is a screw adjustment marked Width, which should allow the lost characters to be brought back onto the screen. In the middle at the rear of the PCB, there is a control marked Height, which perhaps needs adjusting too, to balance what is done to the width. Always observe the usual precautions when working inside a display unit. On or Off - THERE IS HIGH VOLTAGE in there during operation, and it takes some time for the voltage to leak away after switching off, so let it stand then for at least half an hour before opening the case up.

The Cub has been a very stable display, on my system. The only occasions that I have felt impelled to adjust it have been when characters started looking slightly multi-coloured, and there are adjusters for White, Green, Blue and Red on the small PCB attached to the end of the display tube which can be used to get rid of this effect.

A disk oddity that is new to me was reported by Thomas Robbins of Quanta. He has HD drives connected to a Gold Card and finds that they routinely format DD disks to HD capacity. He did not say whether or not the full HD capacity is obtained, but he noted that such disks cause compatibility problems in the drives of other QL users. To prevent the HD format, he uses a command that is not listed in the Gold Card instructions - FLP_DENSITY D. This forces a DD format. Having tried this command using D, H and E, I can confirm that it is accepted without murmur. It has no apparent effect when DD disks are formatted in ED drives, the resulting capacity being 1440 sectors for all three parameters. With HD and ED disks, the "format failed" message comes up if attempts are made to format them to less than their nominal capacity, but proper formats are obtained when the parameter used corresponds to the nominal capacity.

It appears that using this command as a way of formatting disks to less than their nominal capacity will be unsuccessful, but use of the appropriate parameter does ensure that disks are formatted to their correct capacity. However, in ED drives, it seems best to either not use the command at all, or use the E parameter; doing the latter results in correct formats on the four disk types checked - standard DD, HD and ED, and DD with a "HD hole" drilled in it. There may well be a sensing difference between Miracle HD and ED drives, as the report from Robbins suggests HD drives do not sense disk type by looking for the square cutouts, whereas the ED drives do look for them. As you might expect, there is a small reservation concerning using `flip_density E`; drilled DD disks consistently gave about 30 sectors less when E was used than when H was used.

Rom swapping

Many users will have upgraded their QLs from the AH rom to the JM version and, so far as I knew until recently, that could be done simply by removing the existing two chips and replacing them by the newer ones. That procedure worked fine with one of my QLs. Ian Turner wrote recently to the Quanta newsletter to say he had tried this modification and it did not work on his QL; he asked for help. He soon got replies, and the answer to the problem. Earlier QLs had Qdos on eeprom chips, while later ones used rom chips. Those with the eeproms had two jumpers - JU1 and JU5 - fitted; those with roms had three jumpers fitted - JU2, JU3 and JU4. The jumpers are located alongside IC34 on the PCB and, as Ian commented, they look rather like resistors.

Does anyone out there have a copy of ICE? Ian's copy has become corrupted; it appears to have been the pre-mouse, pre-rom variety (did such a thing exist?).

QXL pricing

Information given out at a recent meeting in Nottingham set the price range for the Miracle QL-emulator card as roughly £300-500, including shipping and VAT. The basic

card would have 1 MB of ram, and the highest-priced one 8 MB. This looks to be, prospectively, the fastest "QL" yet, with the clock rate starting at 20 MHz and capable of being lifted to over 30 MHz. In other respects it will have much the effect of the Gold Card. (See QL Scene - Ed.)

Dilwyn Jones Computing is now selling the latest vector drawing program from Progs of Belgium. While this is rather expensive, it does come with masses of clip art and it takes drawing into another league by avoiding much of the jaggedness inherent in the conventional methods. Founts do not become rougher as they are enlarged; in fact, it is reported that those included with this program are actually smoother above about the 10-point size. Software87 also is selling the program, but the approach is different. This supplier offers it with an integrating module to allow text output from text87 Plus4 to be combined with images from the drawing program and printed together from the latter. This does not quite make Plus4 into a pukka DTP program, but many users want only to make straightforward insertions of images into mainly-text documents and the combination of Plus4, the drawing program, and the integration module provides this capability.

Some features of programs influence the user more than others, and so it is with me in the matter of reformatting text in a wordprocessor. The incorporation of automatic reformatting into Perfection improves the feel of the program greatly. On a system with Gold Card, the default auto-reformat setting works fine, the text snapping to its new position very smartly after a pause of 1.5 seconds, without causing significant visual disturbance. The user is provided with control over the time taken for reformatting to occur following modification of text, and this should allow adequately for differences in speed of QL system versions. With the GC fitted, the re-drawing of the screen is fast and the delay can be brought down to almost zero without causing serious lags, but low values do introduce text flicker (even when there is no reformatting) and it seems best to stick with the default setting, or maybe a little below it. If you are the kind of typist that has to

look at the keyboard most of the time, you aren't going to notice much of what happens on the screen, and a low-delay setting should be fine. Cursor movement also is smooth and rapid, with the cursor staying clearly visible all the time. My version of Perfection is 5.03 but that may well have been superseded by now.

Cheap bits

Greenwell Electronics (see Information) regularly offer items which will be of interest to the DIY enthusiast. Their February and Spring catalogues list the ICL OPD circuit board complete with 68008 chip for £250, and 5.25-inch 360-KB disk drives for £12.95 (£7.00 if you fancy buying 100 or more!). They also have a 12-inch amber monitor for £34.95, complete with internal audio amplifier and speaker; whether or not this could be used with the QL or other micro is not stated, but the input required is composite video with negative synch, not RGB.

The war game program Fleet Tactical Command was released late in 1992 in its FTCII version for PCs, making it possible to link them to QLs for joint operations. Di-Ren (see Information) gave the QL-PC serial wiring connections shown in the illustration here; as they state, they (and QL World) cannot guarantee this wiring information to be correct and, bearing in mind there is voltage on some lines, errors could cause damage, so it is up to the reader to check that the wiring is appropriate for his/her computers.

Laserprinting

Paul Stewart wrote many months ago, and (hopefully) he will have found an answer to his question by now, but the subject is worth mentioning again. He uses *Perfection*, and wanted to use his Panasonic KXP-4430 laser with it. Knowing that a Canon LBP-4 worked satisfactorily when the Brother HR15 Quill printer-driver was adapted for Perfection, he felt he would be successful with the Panasonic. Are you with me so far? He tried using the adapted

Brother driver with his printer. Not surprisingly (for those familiar with laser printers), he didn't get sensible results. He then resorted to using an Epson driver from Quill, with the printer in Epson-emulation mode. This got him print, but not in Times as he wanted. Times appears to be available only with the printer's Hewlett-Packard emulation mode. Digital Precision advised using Professional Publisher (which he has got) as there is a Hewlett-Packard LaserJet driver for that, but he did not have time to learn to use ProPub more effectively.

The alternative was to write a driver for the Hewlett-Packard mode of the printer, in Perfection, which allows you to write more-or-less what you want into a driver. The trouble is that the HP language is - if anything - more difficult than those for dot-matrix printers and quite beyond the comprehension of most users. What Paul was looking for was a ready-made driver that some other reader had written. Maybe he still needs it, so please contact me if you have such a thing.

There are a few comments to make on this. Avoid buying a printer before establishing that it will work with the software you use (or vice-versa). When buying a laser printer, prefer one that has HP LaserJet II emulation built-in, because that is the laser standard, in the same way that Epson FX-80 is the dot-matrix standard. In emulation mode, you will lose some of the printer's capabilities, so do not buy a printer on the basis of test printouts in its "native mode", unless you are sure your software has a driver for that mode. Clearly Perfection (and almost all other QL software) will not have a Panasonic KXP-4430 driver. Most QL software will not have an HPLJ II driver either, so you may be reduced to using the printer in Epson FX-80 emulation mode, as a high-class dot-matrix printer.

Even outside the QL world, you cannot get away from the awful business of writing your own printer-drivers, unless you buy only the most-popular models, or accept limited utilisation of your printer's facilities. Here is an example of what you are presented with when investigating how to get an HPLJ II to print the font you want:

"Font Management, Specify Font ID - ESC*c#D 027 042 099 # 068"where "# is the font ID number, 0 to 32767".

That seems to imply more fonts than any HPLJ I've come across has! What does the average person make of that bit of information? It comes from one of three thick guides with my Epson laser printer. Yes, I think I would be able to do something with it, after more than eight years' dealing with such obscure information, but most average users would not have a clue. Fortunately, when using the Epson with the QL, my task is made simple, because text87 Plus4 has both Epson GQ-5000 and HPLJ II drivers available for it.

David Wyatt wrote to inform us that the scanner he had ordered from TK Computerware had arrived. He was displeased that there was no word of apology for the delay, but he says he is delighted with the scanner itself.

Trading standards

We do not get many complaints about suppliers

these days, and those we get are usually settled without too much difficulty. For readers unfortunate enough to have unsettled grievances, the advice is always to contact the Trading Standards Office in the area where the supplier is based; when legal action looks to be desirable, claims should be made through the Small Claims Court at the County Court, again in the locality where the supplier is based. You can obtain information about both through your own local Trading Standards Office and Courts.

INFORMATION

Components:
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Tel 0703 236363
Fax 0703 236307

Mr M Walkerdon
Trading Standards Office
11 Church Street
Folkestone
Kent CT20 1TN
Tel 0303 850294
Fax 0303 221508

Fleet Tactical Command II for the QL £39.93, for the PC £49.95, plus post and packing:

Di-Ren
59 William Street
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Tel 0922 33580

Vector-drawing program:
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SOFTWARE87 MOVES INTO DTP

Software 87 have launched a modular desktop publishing package which allows their popular *plus4* wordprocessor to be integrated into a full text, graphics and page-layout combination for the QL. The package is recommended for Gold Card QLs or Atari/QL emulators, but will also run on QLs extended with a Miracle/Quibbesoft Trump Card.

The main partner to *plus4* in the new system is *Linedesign*, developed by the long-standing Belgian software company Progs. *Linedesign* allows the creation of pages consisting of scaleable illustrations and text. Once drawn, items can be moved, enlarged or reduced, expanded, squashed, rotated or transformed without losing detail or affecting other objects on the page. *Linedesign* can treat text in the same way, combining any of 57 scalable fonts supplied as part of the program.

Linedesign is also notable for comprising no fewer than 11 disks, including the program, disks of scalable fonts, and a large collection of ready-made drawings for use. By itself, *Linedesign* costs £99 from Software 87.

The link between *Linedesign* and *plus4* is *publisher's pack*, a utility which allows the user to combine the editing and printing capabilities of *plus4* with the graphic and font handling of *Linedesign*. The program comes with a step-by-step instruction manual, several sample documents, and ready-made page-design items such as shadowed boxes. *Publisher's pack* by itself costs £39.

The whole package - the latest version of *plus4*, *Linedesign* and *publisher's pack* - under the name *plus4 publisher* costs £189. *Linedesign* and *publisher's pack* together as an upgrade to existing *plus4s* costs £119, and the current version of *plus4* by itself costs £79.

Software 87 is also carrying a range of the most popular German QL programs, including the latest versions of *QD*, *QSpread* and *Datadesign*. They have details and well-laid-out leaflets on most of their current list - for more information send an SAE to **Software87, 33 Savernake Road, London NW3 2JU**.

plus4 publisher

QL Desktop Publishing and Wordprocessing at its Best

NEWS!

Software87 are pleased to announce an important development on the QL software scene.

Thanks to *plus4*, QL users have been able to produce high quality text output matching that of expensive PC word processors. But, until now, no QL program has been able to produce drawings and large text of similar quality (up to 360 x 360 dots per inch).

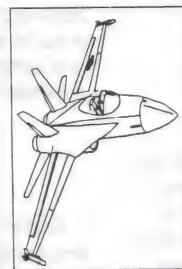
The new page design program *LINEDesign* allows the creation of pages consisting of scaleable drawings and text. Once you have drawn an object, you can move it around the page, enlarge or reduce it, expand or squash it, rotate or transform it without losing any detail and without affecting other objects on the page.

In addition, *LINEDesign* can do the same with text, using any of the 57 scaleable fonts supplied with the program. Each font can be printed in any size

plus4 and LINEDesign work together

text from *plus4* can be combined with *LINEDesign* output in two different ways. Using one method, text is produced and printed with *plus4*. The page layout is then sent to *LINEDesign* for positioning the graphics and headlines which are then overprinted on the page from *LINEDesign*. The other method allows text to be formatted in *plus4* using the font supplied with *LINEDesign*. Formatted text, including different font selections and justification, is sent to *LINEDesign* and printed together with added graphics.

from small print to huge headline without loss of quality. *LINEDesign* is supplied on eleven disks which contain the



program, the fonts and a large number of ready-made drawings (clip-art) for inclusion in your publications.

Publisher's pack allows you to combine the text editing and printing capabilities of *plus4* with the graphic and font handling power of *LINEDesign*.

A step-by-step guide together with several sample documents and ready-made graphic objects for desktop publishing such as shadowed boxes provide all you need to start preparing your own professional quality publications.

plus4 publisher comprises the *plus4* word processor, *LINEDesign*, and *publisher's pack*. A Gold Card or Atari with QL Emulator is highly recommended but the programs will run on QL's with the Trump Card.

QL scene

SHOWN IN THE USA

International QL Report's Bob Dyl in the USA is arranging a one-day QL show and symposium in Newport, RI, on the American east coast. Several UK suppliers are expecting to attend, including Miracle Systems, TF Services and WN Richardson, who will be demonstrating their latest projects. US users and user groups will be showing their latest software developments. The show will be held on June 5 at the Salvation Army Building, 51 Memorial Blvd., Newport RI 02840, USA from 1pm to 6pm. The cost is US\$5 on the door, or US\$3 if pre-registered.

For more information, **Bob Dyl at Seacoast Services can be reached on (USA) 401 8493805**.

DIY Toolkit rides again!

DIY Toolkit volumes are available once more on disk and microdrive, thanks to former Quanta editor Dr. Bill Fuggle. Prices have been reduced and A5 laser-printed booklets are now available to complement each volume, along with the code, commentary, tasks, SuperBasic and assembler source on disk or tape.

Bill has taken over distribution of the 23-volume set of Qdos accessories developed by Simon N Goodwin over the last six years. Each volume includes all the programs from several connected issues of the long-running QL World column, plus many extras that have been written since or did not fit in the magazine. Recent updates include HD and ED disk checkers for Gold Card, and extensions for Thor and Minerva.

DIY Toolkit volumes now cost a flat rate of three pounds each, on 3.5 or 5.25 inch Qdos disks, or four pounds per volume on microdrive. The original order-processing charge has been eliminated, so prices start at just three pounds for a single disk volume, delivered anywhere in the world. Users ordering two or more volumes receive the printed documentation at no extra charge.

Orders by sterling cheque, bank draft or postal order made payable to **DIY Toolkit, 86 Lordwood Road, Harborne, Birmingham B17 9BY, UK**.

In PhilTration

QL World would like to add that the program featured in Figure five of The Pointer Environment (page 37, QL World, February 1993) was written by Phil Borman of Quanta. Phil confirms that the program is on the Quanta library disk UTILS_GEN4, and that the disk SPECIALS_0, mentioned in the same article as the source of TK2_EXT and LRESPR, is listed as SP_0 in the current library catalogue.

SYMBOLS IN QL WORLD 11

Open Channel

Open Channel is where you have the opportunity to voice your opinions in Sinclair QL World. Whether you want to ask for help with a technical problem, provide somebody with an answer, or just sound off about something which bothers you, write to: Open Channel, The Blue Barn, Tew Lane, Wootton, Woodstock, OX7 1HA.

Sideways

In March, R S Matthews was asking about sideways printing from Abacus in particular.

One such program, written more or less explicitly for this purpose, was WriteTurn. This was available from Sector Software, who no longer advertise in QL World. The program uses the graphics facility of 9-pin dot matrix printers, and works on a .lis file dumped from Abacus (or any other Ascii file, presumably). A special sideways character font is used as the block of saved text is read from file in the special order needed to print column by column rather than line by line. The length of paper possible is that for 250 characters, while the height (the narrow dimension of A4) can be set to give from 48 to 192 rows. This latter figure gives a rather squashed text, but it is still readable.

I have used the program a lot, with Abacus, for presenting Family Trees which always work out very long horizontally, and not so very deep. In fact they usually go beyond the 250 print columns (not Abacus columns), which means having two consecutive printouts which can be easily achieved by modifying the WRITETURN boot file, and saving two or more .lis files in ram. I normally use printer rolls, but fan-fold paper should work just as easily to get 5-foot printouts.

For this application, Abacus is used in text mode only. This is a little awkward, since text cannot always be placed exactly where you want it - it does not recognise leading spaces. However, because the character font is accessible, I use a dummy character as a space, and then modify this character in the font to be a blank. You can also redefine some of the other little-used characters to create the graphic bits required

to draw boxes, and the linking lines necessary for Family Tree pictures.

**Peter Tyler
Ormskirk
Lancs.**

We haven't heard from Sector Software for quite a while. Has anyone written, or discovered, any other programs that will do a similar task?

Colour

In the interests of not actively encouraging the wearing of dark glasses in the workplace, I wondered if I should suppress the following information. But I thought, no - don't be a spoilsport. At least John only uses one typeface ...

Influenced by John Parkin's article in *j2* June 1991 about the HP Deskjet 500, I decided to retire my old Brother M-1109. I couldn't believe my luck when I was able to buy the very latest Deskjet 550C, which allows for colour text printing as well as graphics, for only £405 + VAT.

Was there a wordprocessor capable of driving colour within a document? Freddy of Digital Precision told me that the 8 strips in Perfection Special Edition would do the trick. Having not received similar assurances about text87, I forked out £100 for DP's processor.

When the new printer arrived I had visions of sending out my marketing materials the next day in glorious technicolour (and you a computer expert too!). Wrong! The printer, I expect, would have worked soon enough if I'd plugged it into a PC loaded with Microsoft Windows (That depends what you mean by 'soon enough'. We've just discovered a well-known Windows program that can't find its own printer-driver.) The users' manual was not very user-friendly. However, after much

headscratching and the aid of a technical manual sent from HP in Holland, eight weeks later I have finally done it! (It's true. This last sentence is printed in tasteful green, red, blue, yellow and magenta.)

The printer driver which accompanies this letter might save readers seven weeks, six days and twenty-three hours.

Note: the symbol '&' has to be entered using the decimal equivalent '38'. I ran out of strips, and the code for colour cyan is <ESC>*V2S. Can't have everything! The Configurator in Perfection SE can be used to reproduce the colours on the screen. Translate 1 gives me the £ symbol using the PC8 character set. Translate 2 gives me normal-size CGTimes typeface, which I prefer. As it is proportional, I need to set my

margins at 15 on the left and 115 on the right for normal A4 paper. This produces a pleasing ragged right. Translate 3 switches on the four-plane CYMK palette for colour printing. Translate 4 switches on the single-plane palette for black-only printing. Translate 5 switches on the colour black. Translate 6 switches on smaller CG Times typeface. So, if I wish to print a colour document in normal-size CG Times I put the translate 4 and 2 symbols in the top left corner of the screen. Ctrl-Shift-K will print the symbol 1/2., and Ctrl-Shift-L [we think this is an L, but it could be a figure 1. John's typeface is genuinely indistinguishable] prints the symbol 1/4 ..

I have only two problems to overcome: currently I have to switch off the colour at the

Underline On: <ESC>&d1D

Underline Off: <ESC>&d@

Bold On: <ESC>(s3B

Bold Off: <ESC>(s0B

Superscript On: <ESC>(s6v+1U

Superscript Off: <ESC>(s6v-1U

Italic On: <ESC>(s1S

Superscript Off: <ESC>(3@<ESC>(s+0U

Subscript Off: <ESC>(3@<ESC>(s+0U

Italic Off: <ESC>(s0S

End of Line: <CR>

Initialisation

End of Page: <ESC>&10H

Strip 1 (Highlight Off): <ESC>(s1p12v4101T

Strip 2 (Highlight On): <ESC>(s1p14v4101T

Strip 3 (Colour red): <ESC>*v12S

Strip 4 (Colour green): <ESC>*v10S

Strip 4 (Colour blue): <ESC>*v6S

Strip 5 (Colour yellow): <ESC>*v8S

Strip 7 (Colour magenta): <ESC>*v4S

Strip 8 (Colour off): <ESC>*v1S

Translate 1: £

Translate 2: ^<ESC>(s1p12v4101T(Keys SHIFT 6)

Translate 3: "<ESC>*r-4U<ESC>*v12S (Keys SHIFT £)

Translate 4: Ø<ESC>*r1U(Keys CONTROL SHIFT R)

Translate 5: µ<ESC>*v1S(Keys CONTROL SHIFT P)

Translate 6: ρ<ESC>(s1p10v4101T (Keys CONTROL SHIFT W)

Editor's notebook

Anniversary! It's exactly one year since QL World fled the dust and noise of London Town and came to join Arcwind Publications in the green fields of Oxfordshire. The Oilseed flowers are blooming again. It's exactly one year and six months since Robert Maxwell fell overboard and we thought (not for the first time): "Now what?" We're still here.

As I pointed out to a fine mathematical mind recently, "Volume II: Issue 4" means, "Our second year, fourth month", and reflects our general embarrassment at the lateness of recent issues. I may try to produce two issues close together at some stage if the production team can stand it, but I can't work our authors any faster. Talking of that, what's happened to Mike? He was going to send me his copy last week. I know he's a busy man, but ...

The mysterious reference to Bill Newell doing his bit for PR in last month's Eindhoven report will become clear if we can find the missing photo, which seems to have evaded Stevie's filing system. A magnificent sight, and a great loss to QL posterity.

beginning of each line of black text to prevent unwanted magenta appearing. Also I have not yet found an easy way of producing proportional-spaced text in columns.

Now wouldn't it be great if someone devised a printer-driver for Easel so that I can print coloured bar and pie charts? I can dream, can't I?

John Gooding
John Gooding and
Associates
Marlow-on-Thames

Decoded

Having read *Beginners Machine Code* in the March issue, may I point out a few small errors in the text that could be a source of problems for the uninitiated.

There are only 8 data registers (D0 to D7) and only 8 address registers (A0 to A7) not ten as stated.

The DBRA or DBF instruction does not stop when the appropriate data register reaches zero, it actually stops when the data register reaches -1. For this reason, the actual value stored in the data register

must be 1 less than the number of cycles around the loop required.

In the article, listing one shows the value 8000 (hex) being loaded into D0 in order to display a striped pattern on the screen. The following loop will actually overwrite the first byte of the system variables following the end of the screen data. The correct value should have been 7FFF (hex).

At various places in the text, references to the loop counter reaching zero should be replaced by -1. I think that Alan does know about the DBRA instruction stopping at -1, otherwise why would he store zero in register D0 at the end of listing one? If the loop counter stops at zero, then in the example, D0 would have zero in it.

I hope this clears up any problems beginners may be having. I know when I first started assembly language programming many years ago I always got this wrong and expected loops to stop when the counter reached zero, due to my background in Z80 assembler, where the loops actually do terminate at zero.

Norman Dunbar
Bucksburn
Aberdeen

Alan Bridewell replies: Oops. This is what happens when you deal with similar instructions on different processors, like the Z80 and the 68000, and forget to check the programmer's reference manual because you think you know what you're doing. If the mistake was likely to cause a crash, I would very likely have spotted it. As it happens, the listing works as printed, so whatever is being overwritten in the system variables isn't very significant in this case. I'm afraid the same mistake has occurred in part 3, which has already gone into the printing process, but once again it should have no effect of operation in this listing.

As to the other point, I blame my wordprocessor. It simply won't learn that when you count from 0 to 7, you need 8 fingers, not 10. My humble apologies on our behalf.

End of the line

This is not an April fool. Since last summer I have had access to a 386DX PC with *Timeworks 3.00* (Windows) at a local printing resource group. I produce our church magazine there. When I transfer my documents, typed in on *Turboquill+*, tidied with *TextTidy* and transferred by *DiscOver*, I always lost paragraphing in *Timeworks*. For MS-Works I lose line settings.

Imagine my joy at Simon Goodwin's listing on page 36 of the March *QL World*. Imagine my frustration at having sat up till midnight typing it in and trying to get it to work, only to find that it did not work! When I ran it it came up with the following: At line 250 end of file. Line 250 read INPUT #3,a\$. I rechecked my listing and it was right. What gremlins are these?

Hold everything! I've discovered the problem. It lies with the end-of-line codes set in *TextTidy*. If they are set to other than LF (is none, CR/LF, or CR) then Simon's program crashes. Set *TextTidy* to LF as your end-of-line code when making the .txt file and all is well.

James McGreehlin
Alva

End-of-line codes have proved to be absolutely the biggest bugbear on converting programs. This is off James's point, but one hint for people sending Ascii-converted files. The worst problems arise because the destination program invariably can't tell (what were once) the wordwrap returns from the hard carriage returns. The solution is usually simple: ALWAYS leave an empty line between paragraphs - this immediately provides a consistent double-return code to distinguish the paragraph boundaries. Avoid para indents - they don't provide a readable code, and can actually confuse the destination program.

There should be an end-of-sub code on your address label, but if in doubt ring Pauline and ask her.

Error trapping

I have been a QL dabbler since 1988, 'still white behind the knees'. I am more than pleased to have a magazine other than *Quanta* publishing bits and pieces about 'our' micro which are of interest to everybody. I write programs mainly for my own and my family's interest. As you have asked for suggestions for articles, I would like to ask for an article or short series on the subject of writing SuperBasic modules on error trapping of input to be included in interactive programs. As an example, inputting a value between -5 and 5. This is straightforward with a numeric entry such as IF n <-5 OR n >5, but what if 'k' is input in error? I do have disks and a Gold Card, so I have the use of Toolkit2. I am sure others would find this useful as well. Keep up the good work.

R D Hardle
Great Yarmouth
Norfolk

Simon??

Rocky mods

I have owned a QL for eight years now, and have almost every issue of *QL User* and *QL World*. Recently, I was given a second QL. It is an issue D07, and despite carrying out the Sinclair modifications to it, it will

not work with a different rom set. It currently has 2 x 16K eeprom in IC33 and a 16K eeprom in IC34. There is also a flying lead from the 'piggybacked' eeprom to the circuit board alongside the 8302. There is also a socket containing IC17. Having tried my D13 JM roms, a 64K MG eeprom and my 1.64 Minerva eeprom, with and without IC17 in place, without any success, I am writing to you to ask if any readers have any other ideas or modifications to be carried out? The mods carried out so far are:

R104 (82 ohms) in TR1 collector circuit
R92 (220 ohms) changed to 390 ohm
R105/R106 (1 kohm) across C19 and D17
D22/D23 (1N4148) in series with R100/R101
R102/R103 (33 kohms) between IC23 pins 21, 19 and -12V.

Then the firmware can be upgraded to build standard D11. I know that the Sinclair manual has some inaccuracies, and I can only assume that there is something wrong with the mods.

Also, my master and backup copies of ICE have been corrupted. If anyone can let me have a copy I would be grateful. And, lastly, if there is anyone in the Lincoln area who would like to correspond, please write to me via QL World. Thank you.

Ian Turner
Waddington
Lincoln

As I read this, the names 'Tony Firshman' (TF Services) and 'Dennis Briggs' (Adman Services) kept repeating themselves in my mind. And, of course, there are plenty of other knights of the soldering iron out there who have done these mods. Also, anyone who wants a pen-QL, don't pass up this offer. Too many QL users still operate in virtual isolation. Make a contact.

List puzzle

I obtain ribbons for my Seikosha printer from Imac Ltd., Stuart Road, Manor Park, Runcorn, Cheshire WA7 1TH. Tel. 0928 579000. Imac UK also produce a very good catalogue of office and computer supplies, with a good delivery service. There is a small order surcharge

for less than a pack of six ribbons.

May I say how pleased I am that you are including Simon Goodwin's SuperBasic programs in QL World. I am sure they will be of interest to many readers and my own South West Quanta User Group.

There is something which has puzzled me for quite a while, which has not been explained to me by my associates or by a question to Alan Bridewell at the Bristol Workshop in Clevedon. It is regarding listings of the type of Listing one on page 36 of the October 1992 QL World.

I have been a subscriber to QL World since 1986, and have enjoyed the many items of interest including successfully typing in the SuperBasic programs in the magazine. Who knows, I may become a program writer yet, and send in a program myself!

Roy H Stephens
Wellington
Somerset

When I first asked Alan to do a Beginners' Machine Code series, he said it was difficult to explain! The listing you mention is one of Rich Mellor's, so I'll give him a crack at it. Watch this space.

Endless loop

L Atkins (*Open Channel* February 1993) seems to have had problems with my FONT routine - I do not know how the double \$\$ marks managed to get into the listing. They were not there before! If he needs any more help with that (or machine code) he can contact me.

I can supply the latest version of *Qram* to Laurence Carpenter if he sends me (via *QL World*) his original mdy, a backup mdy, an SAE and £2.

To J R Daniels (March 1993): lines 450 and 460 are rather unconventional programming style, but simply loop onto themselves, reducing (or increasing) y by two pi, until y<two pi and y> respectively. They could be replaced by the (slightly slower):

```
450 REPEAT cut_y:IF y<=two
pi:EXIT cut_y:ELSE y=y-two pi
460 REPEAT inc_y:IF y>=0:EXIT
inc_y:ELSE y=y+two pi
```

Rich Mellor
Walsall

Abacus bug

Regarding Peter Jones' letter regarding the oddity with Abacus where the displayed spare memory is immediately followed by the cell contents, this is a bug in Abacus which manifests when the spare memory exceeds 999K. The only fix is to reduce the memory available to Abacus.

The memory available to *Abacus* can be reduced by using Simon Goodwin's *Taskforce* program listed in a previous *QL World*, or simply by taking the memory for something else prior to executing Abacus, for example by typing:

```
RES_SIZE 1216
```

which will reset the QL to 1216K (note the number of K must be a multiple of 64). After the reset run the Abacus boot program. Alternatively, add the following line to the start of the Abacus boot program:

```
FORMAT "RAM1_1250"
```

which will create a useful ramdisk with the memory not used by Abacus.

Stuart Honeyball
Miracle Systems
York

Networking

I really appreciate the *DIY Toolkit* articles by Simon Goodwin and his predecessors. I use them to enlarge my knowledge of how computers work. Although I am far from being an expert, I am fascinated by the methods demonstrated in Simon's articles.

The setup that I use is based on two networking QLs. On one (QL1) I run the machine code of the *DIY SuperBasic* extension that I am studying. Its progress is traced by using Qjump's QL-Monitor. Meanwhile, on the other (QL2) I have Taskmaster controlling the multitasking of IDIS Disassembler, GST QL-Assembler, some small utility programs and several copies of *Editor Special Edition*. Into one of the latter, I load the assembly code for the extension, and then add copious comments to it as I follow the machine code on QL1.

One of the advantages of using the network and the Monitor program is that I can transfer the contents of the

registers and memory from QL1 into the assembly code text in QL2, where it can be converted into comments that help me to understand what is going on.

Often when I am 'messaging about' with the machine code, I cause QL1 to hang up. Resetting QL1 has no effect on QL2. This is another advantage of networking.

At present I am trying to follow Simon's FlexyNet code. This is not easy because it disables the interrupts. This stops Monitor from being able to trace. Thus, I have to advance the program counter over the disabling step. Perhaps FlexyNet will still work if I slow it down enough (probably not ...)

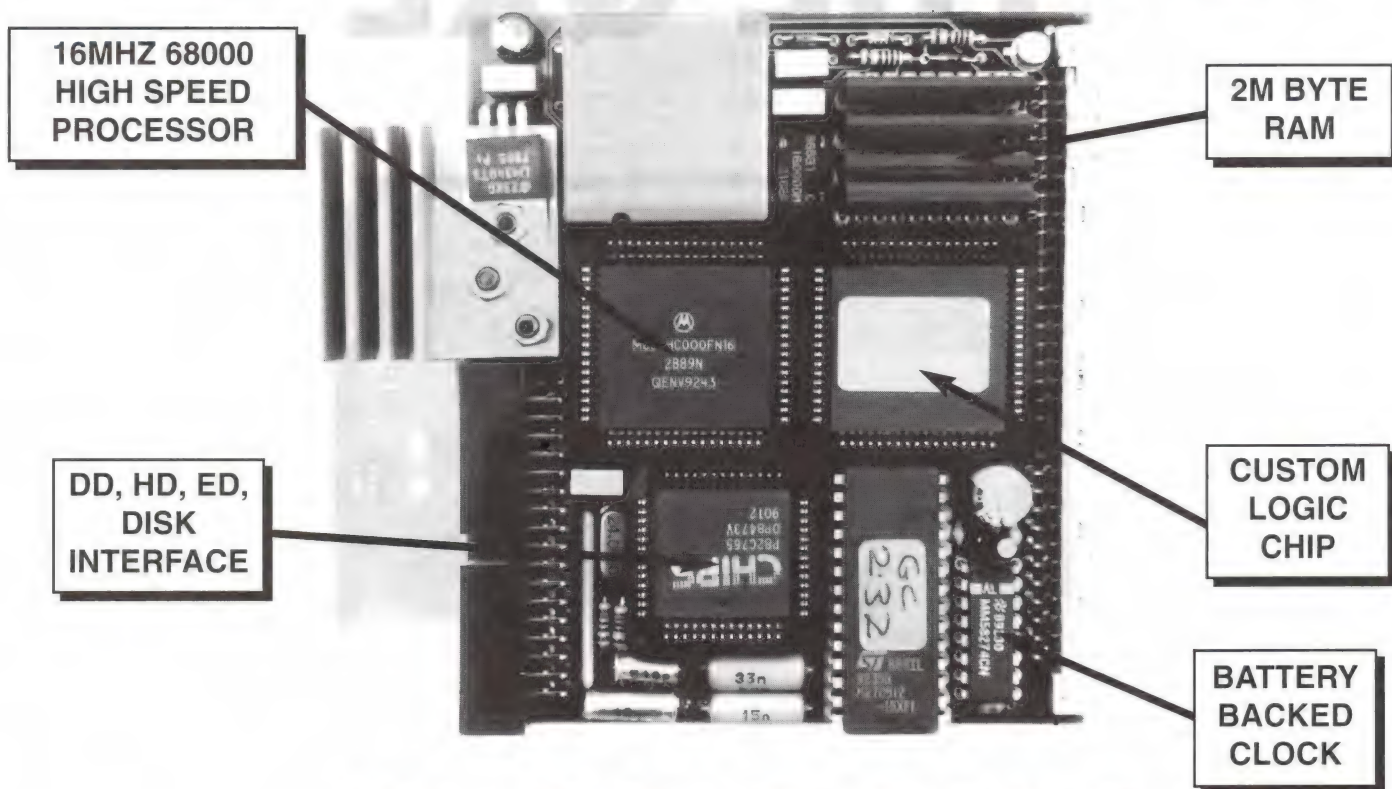
The more I study Qdos, even though it is beginning to creak with age a little, the more I suspect that we in this country may have once more missed an opportunity to develop a brilliant idea. Where would personal computing be now if Qdos had had the investments that MS-DOS has had? Possibly many completely memory-based fast packages, each using common multitasking utility facilities. Perhaps no need for hard disks.

Still, that is just dreaming. In the meantime, I hope that Simon will continue supplying the material which will give me hours of future entertainment.

David Williams
Withersea
North Humberside

Open Channel

MIRACLE SYSTEMS



QL GOLD CARD

£225 inc. (£200 outside EC)

This is the expansion that has been revolutionising the QL. It is very easy to fit - it simply plugs into the expansion port at the left hand of the QL - and once fitted it will instantly increase the execution speed of the QL by about 4 times due to the presence of a 16MHz 68000 on board. There is 2M of fast 16 bit RAM of which QDOS sees a contiguous 1920K. The remainder is used for shadowing the QL's ROM and display memory and for the GOLD CARD's own code.

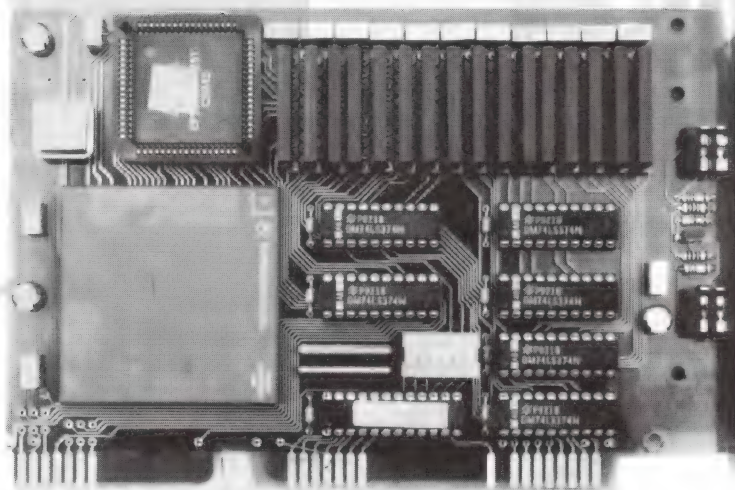
There is a disk interface which can access 3 mechanisms (4 with the DISK ADAPTER) of 3 different densities, DD (double density, 720K), HD (high density, 1.44M) and ED (extra high density, 3.2M) in any mix. The disk interface connector is the same type that was fitted to the TRUMP CARD so most QL compatible disk drives can be used. Please note that DD drives still give a capacity of 720K per diskette. Our DUAL ED DISK DRIVE allows the GOLD CARD to access DD, HD and ED diskettes.

Another feature is the battery backed clock. When the QL is switched on the contents of the clock are copied into the QL's clock so that the time and date are correct. The firmware in the ROM gives the GOLD CARD all the functionality of the TRUMP CARD like TOOLKIT II and there is a sub-directory system for floppy and RAM disks.

Physically the GOLD CARD is about half the size of the TRUMP CARD and so fits almost all within the QL. Its current consumption is well under the allowable maximum so no special power supply is required. The GOLD CARD comes with a 14 day money back guarantee and a 2 year warranty.

MIRACLE

THE QXL



The QXL turns the common PC into a QL compatible. The package comprises a half card that plugs into an 8 or 16 bit standard ISA slot and a diskette loaded with a QDOS compatible operating system and a Superbasic compatible interpreter. After installation simply type QXL and the PC will appear to be a QL allowing QL programs to be run from QL format diskettes.

The card itself has a 32 bit 68EC040 processor running at 20MHz which gives a good turn of speed. This processor has access to its own RAM and so performance is virtually independent of the host PC whether it has an 8088 or a Pentium. In fact the PC is used purely as an I/O system giving QL programs access to the PC's floppy disc, hard disc, keyboard, display, serial and parallel ports. The card itself has QL style network ports to allow connection to a QL network. The minimum PC specification required is an XT with EGA display and a spare standard slot.

Varying RAM sizes from 1M up to 8M can be supplied. The smaller capacities can be upgraded to the larger ones and the cost is simply the price difference. Not all the RAM is available to the user programs; the 1M equates roughly with a TRUMP CARD QL memory size and the 2M with a GOLD CARD QL.

During the lifetime of the QXL we intend to enhance the software to make use of the new hardware facilities of the PC such as SVGA graphics. As has been our policy with the TRUMP CARD and GOLD CARD we intend to provide software upgrades free of charge.

SYSTEMS

QXL prices

1M	£295	(£255)
2M	£325	(£280)
5M	£410	(£355)
8M	£495	(£430)

(prices in brackets for outside EC)

**See us at The Salvation Army Building,
Memorial Boulevard, Newport, RI 02840,
U.S.A. on 5th June 1993, 13:00 to 18:00**

INTERNATIONAL QL REPORT (IQLR) is a regular magazine that all QL users should read. It has articles for the beginner, the advanced user and every one else in between. Also, the international flavour combined with low advertising rates makes it probably the best place to locate QL related items. IQLR is run by QL enthusiasts whose proud boast is that they have never been late with an issue. If you do not already get it then 'phone us now. One year's subscription for 6 issues to any European address is £22.00 and it's worth every penny. Subscribers elsewhere should contact SeaCoast Services, 15 Kilburn Court, Newport, RI 02840, U.S.A. direct.



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Expires ☐☐ / ☐☐

Name _____ Signature _____

Address _____

QLScene

Merz Goes Game

Jochen Merz has released two new games for the QL. The word may have gone round that the QL is no game-player's machine, but "serious" games still have a healthy following. *The Oracle* is billed as a "game for QDOS and the Pointer Environment", a "beautiful and ancient game out of the depths of history ...". You must boot up with a clean machine, repeat the filename twice, and meditate carefully over each move. The first correct solution to reach Jochen before the end of December 1993 wins a prize.

The game is played by placing coloured tiles on a 96-square

board, creating as many matches as possible. The centre of the board is called the Within, and the outer edge is called the Beyond. The Oracle speaks and gives you hints whenever you complete a high-scoring match.

People who have played an easier version of this game say that the secret is to set up as many opportunities for a match as possible, and also that it is addictive. Perhaps Jochen has discovered the ancient secret of game-playing on the QL.

The other game, *MineField*, though less lofty in inspiration, also uses the Pointer Environment (which is

included on the disk), and Toolkit 2 (which isn't). The program supports the higher resolutions available to the QL Atari emulator. The game consists of uncovering all the squares in a field without being eliminated by a 'mine'. The instructions contain a (very) short introduction to the Pointer Environment.

The Oracle is Jochen's own work, and he is the distributor for MineField. We have no price details yet, but watch this space. More information from **Jochen Merz Software, Im Stillen Winkel 12, DW-4100 Dulsberg 11, Germany. Tel. (Germany) 0203 501274.**

Now check it again

After much discussion and several telephone calls between the editor, Simon Goodwin and office manager Fran Maxwell to establish the correct version, we printed last month some missing characters from line 850, listing two of March's DIY Toolkit.

Unfortunately, we printed the incorrect version. The missing characters should be "8018", not "8118".

Commenting shortly after publication, Mr Goodwin said first "eek!" and then "whah!". The Editor would only add "aargh!".

GIVE US A LIGHT

NESQLUG are still alive and well and have been asking editors of other QL fanzines if they might be suffering from editorial burnout (apparently a subject that had been raised within their own walls a bit back). The replies seem to add up to a resounding No!

They were kind enough not to ask QL World, but this editor can report: the only editorial burnout around here is when two (or more) QL luminaries are arguing over (or even at) her head, and then it usually takes the form of bursting into flames.

Meanwhile, in the latest NESQLUG Newsletter, Hugh H Howie is doing the fiery bit.

Keep burning, NESQLUG. Other wandering sojourners seeking guidance from the Abyss of Confusion can reach them at **PO Box 8763, Boston, MA 02114, USA.**

Mouse Pointer for Fido

Erik Slagter of Qdos Software in The Netherlands is offering Qpoint, a mouse-driven Qbox Fidonet mail reader for Qdos, SMSQ and Minerva users. Fidonet use is a specialised area, but gives access to other users all over the world. Erik's best advice for new or perplexed users is to find a current user in your local group or area and ask for their help. But there is some information in the leaflet and order form which he has printed.

The program for current Qbox users costs 40 Dutch guilders or equivalent, plus carriage. The leaflet lists special features and methods of ordering/payment. Get the leaflet by contacting Erik Slagter at **Beijerland 15, 2716 CM Zoetermeer, The Netherlands. Tel. 010 31 79 213659. Fidonet: Erik Slagter 2:281/503.2 or Internet: v882022@sl.hs.nl.**

Belgium by fax

PROGS of Belgium now have a fax number: both voice and fax operate on **+32 16 488952.**

Recent upgrades include DataDesign to 3.04, with new commands in Merge file, Stuff record, View file, and Replace, and some bug fixes; LineDesign to 10.3, with bug fixes and higher speed. Current users who have been in touch have received free upgrades; other users should contact Progs at **Haachtstraat 92, 3020 Veltem, Belgium.**

QXL GOES PUBLIC

Miracle Systems' long-awaited QXL card - an internal card for MS-DOS, PC-compatible computers which effectively installs a high-specification QL inside PC hardware - is due on the market this month. As we write, Miracle are only awaiting the final touches to the first release software, an entirely rewritten version of QDOS, now known as SMSQ.

Stuart Honeyball of Miracle told *QL World* that the software, being written by QL guru Tony Tebby, is now very close indeed to completion, and that they expect to be shipping by the time the May issue of *QL World* comes out (currently late May or early June). The QXL will be issued in four memory sizes, giving users the maximum choice and flexibility. These will be 1 megabyte at around £295, 2MB at around £325, 5MB at around £410 and 8MB at around £495.

Miracle already have a good number of orders for the QXL (they won't say how many!) and, Stuart tells us, orders their components stock many months ago, so that there shouldn't be any order backlog. Miracle will also be issuing software upgrades free of charge from the start, so that early customers will not be at a disadvantage.

Stuart thinks that many of their current orders come from people who have discussed the system with him at the computer shows where Miracle make regular appearances. The obvious attraction at the moment is to current PC owners, but he points out that the card could be a route to moving QDOS software into workplaces that it doesn't currently reach, as it can be fitted in virtually any standard AT or XT PC clone. There are three main attractions: getting two computers into one; from the PC's point of view, getting access to a new suite of programs under a new operating system; and it is also a speed upgrade. Once the software is developed to handle SVGA, it'll be a graphics upgrade as well.

The release version of the software, known as SMSQ, is a completely rewritten operating system with multitasking Basic, developed from Tony Tebby's QDOS rewrite SMS2, and tailored for QL compatibility. The functionality, says Stuart, will be the equivalent of a QL fitted with a Gold Card, but faster.

Jumping the gun a bit further, what will be happening now on Miracle's other projects? Miracle have finished their work on the QXL hardware, and are now looking to complete the much-desired Graphics Card in the next few months. "The chip has been designed, and now the final 10% of the work has to be done," says Stuart. When the Graphics Card is under way, Miracle will turn again to the SCSI disk interface which they have long been planning.

One of Miracle's projects this year will be to visit the one-day American QL Symposium in Newport, RI, USA on June 5th, along with a number of other European developers and US suppliers. Miracle will be demonstrating the QXL card, as they did in Eindhoven in February.

Miracle will also be going to Ireland for a show in Newtown Abbey (5 miles north of Belfast) from 1am on 26th June. For more details of that event, contact Keith Johnston, 21 Orangefield Road, Belfast BT5 6DB. They also intend to visit, and to set up with Tony Firshman's help, more user-group meetings, instead of fairs. Says Stuart: "We'll consider going anywhere in the world."

For more details of the QXL card, see Miracle's advertising in *QL World*. Miracle are loaning *QL World* a unit for photography - another tribute to the company's increasingly streamlined production capabilities.

ALL FORMATS DIARY

Coming dates for the All Formats Computer Fair are:
May 22 London Sandown Park, Esher, Surrey
May 29 Leicester, De Montfort Hall, Granville Road
30 May West Midlands National Motorcycle Museum, J6 M42
19 June London Novotel, Hammersmith
20 June Brunel Centre, Templemeads Station, Bristol
26 June North West Haydock Park Racecourse J23 M6
27 June Midlands National Motorcycle Museum, J6 M42
25 July ditto, 11 September ditto. Either they haven't filled in their schedule yet, or they're off on their summer holidays. There's a full September schedule.

Check with suppliers whether they will be at a particular Fair. If you have far to travel phone All Formats 0608 663820 to check arrangements haven't changed. Many QL suppliers only attend the Glasgow and London fairs. In London the Hammersmith venue is favoured.

Day tickets are £4; attendees can get up to 50 £1-off vouchers by sending an SAE to the organisers at: **Maple Leaf, Stretton-on-Fosse, Moreton-in March, Gloucestershire GL56 9QX.** (Only one voucher per ticket.) Photocopies of these vouchers are also accepted. Admission to the Fairs is a flat £2 between 2pm and 4pm (£1-off vouchers do not apply at these times).

What next? A Gold Card?

An Irish postie has taken up his QL again after years away, all because of *QL World's* see-through postal packets.

Royal Mail employee James Caulfield put his QL in the cupboard when he decided to try a PC several years ago. But the wonder-machine clearly didn't drive the QL completely from his life, for in February this year the words "Dilwyn Jones Computing - QL Software", on the back of a *QL World* speeding to its subscriber, caught his eye. Clearly delighted by Dilwyn's list, he wrote to DJC expressing his desire to resurrect his QL. He also asked for a catalogue, and a contact address for *QL World*.

We don't know if Mr. Caulfield's QL is being cared for by a dedicated QL leprechaun, but we notice that he lives in Sinclair Dell!



VERY BASIC SUPERBASIC

In the first instalment we looked at how to type in a SuperBasic program and explained some common jargon. In this second part I'll look at printing commands, give some short example programs for you to type in, and some guidelines on how to debug them if they don't perform as they were meant to!

PRINT is the instruction which tells the computer to write something on the screen, to a printer, or even to a file on a disk or microdrive cartridge. Using the PRINT command to write to a printer or to a file on a disk or cartridge is more complex and will be covered later.

Fussy logic

As we discovered in part 1, the PRINT command is a little fussy about whether we print numbers or text, for example. We have to use numbers, not words, to print numbers. The reason for this is that the QL can use "words" as variable names. So when we tell the QL to PRINT 7, it's quite obvious what we mean. But if we told it to

```
PRINT dozen
```

all it does is to print up an asterisk on the screen to tell you it doesn't understand "dozen". Why? Because it needs to be told what the word "dozen" means. You will remember using statements like LET x = 6 from your mathematics lessons - the QL can do algebra too. We use the LET statement on the QL to tell it that the word (or "variable name") following is to have the value shown. Enter this command (there must be a space after the word LET)

```
LET dozen = 12
```

The variable "dozen" has been

given a value of 12, so if we enter the PRINT dozen command again, it now knows what we mean and prints up 12 on the screen. We can change the value of "dozen" in the same way:

```
LET dozen = 13
```

If we now print its value again, it will write 13 up on the screen. Now we see why it's called a "variable" - its value can be varied. The computer does not make the same assumptions that we make!

This is not very useful. Let's look at how to change its position on the screen - you might like to type this in as a program rather than the immediate commands I list here, so type the program in figure one, run it and then try to make changes to become familiar with what can be done. It introduces another new command, AT, which positions printing anywhere in one of the "windows" on a screen. When you switch on a QL and press F1 or F2 to start up, the screen is divided into three 'boxes' (known as 'windows').

Figure one

```
100 CLS
110 LET dozen = 12
120 AT 5,0
130 PRINT dozen
```

Normally, printing commands send their outputs to the red window, "window #1" (the # symbol is called Hash, and here stands for 'number'). The black box at the bottom, where anything you type normally appears, is called "window #0" and the other window (which may be white or blue depending on whether you are using a monitor or television display) usually shows the program you have typed in.

AT command

The AT command specifies where the next printed item will appear in the window to which you refer. The example in figure one (AT 5,0) means that printing will occur 5 lines down, 0 characters across (that is, at the

down.

If we want the printing to occur in one of the other windows, you must specify this by using a #number parameter, which is not as difficult as it sounds! Basically, this involves adding a #0, #1, or #2 to some of the commands. Figure two shows how the program looks -

LISTING 1

```
100 REMark simple price calculator
110 CLS
120 INPUT"Enter price per item ";
    unit_price
130 INPUT"Enter number of items ";items
140 REMark the \ symbol prints a blank
    line
150 PRINT"Total price is ";items *
    unit_price
```

LISTING 2

```
100 REM setting the QL clock and showing
    the time
110 CLS
120 INPUT"Enter year (e.g. 1993):";yr
130 INPUT"Enter month (e.g. 4):";mth
140 INPUT"Enter day (e.g. 15):";dy
150 INPUT"Enter hour (e.g. 14):";hr
160 INPUT"Enter minute (e.g. 30):";mn
170 INPUT"Second (e.g. 59):";sc
180 SDATE yr,mth,dy,hr,mn,sc
190 REMark show the time as a digital
    clock
200 REMark use BREAK (CTRL SPACE) to
    stop this program
210 REPEAT show_time
220   AT 7,0 : PRINT DATE$
230 END REPEAT show_time
```

LISTING 3

```
100 REMark keyboard familiarisation -
    stop with BREAK
110 LET k$ = "ABCDEFGH IJKLMNOPQRSTUVWXYZ
    abcdefghijklmnopqrstuvwxyz1234567890"
120 REPEAT typing
130   LET a$ = k$(RND(1 TO 36))
140   CLS : AT 5,5
150   INPUT "Enter this character: ";
    (a$)!e$
160   IF a$ = e$ THEN
170     PRINT \ TO 5; 'Correct!'
180   ELSE
190     PRINT \ TO 5; 'Wrong!'
200   END IF
210   PAUSE 100
220 END REPEAT typing
```

left margin). The values used start from 0 for the top left corner for both distance across and

you need to add #0, #1, or #2 followed by a comma or semicolon. The significance of punctuation in print commands

will be discussed later.

The program in figure two will clear the part of the screen normally used to list the program and print the results of the program there. To get the program back, simply type in the command LIST which will display it in the normal part of the screen. LIST can also have a "channel number" (another name for these #numbers) - for example, LIST #1 sends a copy of the program to the red window on the screen.

Figure two

```
100 CLS #2
110 LET dozen = 12
120 AT #2,5,0
130 PRINT #2,dozen
```

Help!

So something went wrong! Let us try to work out what went wrong, or 'debug' the program. Examples of things going wrong might be:

1. An asterisk is printed instead of the value of "dozen". This means that you have mistyped the word "dozen" in either line 110 or 130. They must be the same. Edit the offending line as described last month with the EDIT command! It is also possible that you may have omitted a space between LET and Dozen. The space is essential, and although it is not essential between AT or PRINT and the #2, it is best included since it makes matters clearer.

2. Printing does not occur in the expected part of the screen, or the wrong part is cleared. You have made a mistake with the channel numbers. Check that they are all the same and edit any errors.

In addition to variables and numbers, the PRINT command can also make use of strings. These contain text and are printed exactly as defined. They can be "string constants" (text in quotes) or "string variables" similar to variables described above. Try these commands:

```
PRINT "Hello"

LET a$ = 'Hello' : PRINT a$

LET b = 'Name'
```

The first two work fine; the third fails and the computer

prints up the message 'error in expression'. The problem is that if a variable is to contain text, it must have a name ending with the '\$' symbol. So to get the third example to work, we should have written it like this:

```
LET b$ = 'Name'
```

This now works fine (we hope!). Variable names must start with a letter or underline character, and may include numbers as well, but must not start with a number, and or be the same as a keyword built into the QL (which would cause confusion). So these variable names would be fine:

```
eggs _field w123
```

But these would not because they don't follow the rules:

```
123w starts with a number
print same as the keyword
PRINT
$dd starts with an illegal
character
co&w contains an illegal
character
```

Three variables

There are three types of variable, consisting of one string (text, etc.) type and two numeric types. The string type holds text and all sorts of characters and has a name ending with '\$', while 'integer' types hold whole numbers with values from about -32000 up to about +32000 and have names ending with the '%' symbol and 'floating point' variables (those with names ending with anything other than \$ or %) can hold decimal numbers up to a very high value.

Therefore, these statements are valid:

```
LET a$ = 'Hello'
LET b% = 10
LET c = 5.23
```

But these are not:

```
LET c = 'Hello'
LET b% = 'Goodbye'
```

These can under some circumstances be legal, but not a good idea. The QL can sometimes convert strings to numbers if the meaning is clear:

```
LET d = '1234.56'
LET e = a$
```

The second one may fail if the variable a\$ does not contain

something which can be turned into a valid number (the term for this process is 'coercion' forcing a string to turn into a number if possible).

After typing all those examples in, you may be annoyed to discover that in most cases LET can be omitted! It is legal to type in a command such as:

```
a$ = 'Hello'
```

The computer will usually realise what you mean and deduce that the word LET is intended even if not actually typed! It is a good idea to use it in the early days, since it is a little clearer if included.

INPUT

One other useful little command is INPUT. It is a real pain and very limiting to only assign values to variables using LET. It would be much easier and more flexible if the computer would allow us to enter a number each time the program is run. INPUT makes the computer pause and ask us to enter text or numbers. For example, "INPUT a\$" would make a cursor flash in the red window, inviting us to enter some text (it knows to expect text or numbers from the name, which in this case ends with \$ for text). So we can write a small program to allow the values to be entered and printed based on the above examples (see figure three).

Figure three

```
100 CLS
110 AT 7,3
120 INPUT a$
130 PRINT "The text you
entered was 'a$"
```

Figure three also introduces us to joining together bits to be printed, by putting semi-colons between items in the "print list". Various punctuation symbols can be used between such items:

```
; Semi colon - print next item
immediately after previous one
where possible
, Space items out in columns
or zones on the screen
\ Print next item at start of
next line (on the left)
! If the next item will fit on the
same line, print a space
```

between the two items and print the second item on the same line, or if it doesn't fit just move to a new line before printing.

TO This little word is normally followed by a number to indicate how far across the screen to move to (hence the name) before printing the following item. It prints enough spaces to reach the column specified. If it is already past the column specified (columns are counted across the screen, rows are calculated downward) it will usually print one space before realising it has already gone past the place specified and print the next item there!

Using INPUT in the way shown in figure three is all well and good, but what is the point of just having a flashing cursor appear on the screen with no hint of what to do? We can either add a PRINT command to display some instructions, or we can use INPUT's other little trick - it can print text like a PRINT command. Figure four shows how to do this.

Note that there must be a semi-colon (or other punctuation) between the variable name a\$ and the text (which must be in quotes, although you can use double or single quotes " or ').

Exercise

Modify the program in figure four to enter several items, some text and some numbers. Use different text for each prompt but make sure that the items are entered in a column beneath each other (hint: use a TO statement such as INPUT "text" TO 20;a\$). You will need a few variable names of course. Experiment with long PRINT and INPUT statements consisting of several items to enter and print all items on one line.

Figure four

```
100 CLS
110 AT 7,3
120 INPUT "Please enter
some text ";a$
130 PRINT "The text you
entered was 'a$"
```

Multiple statements: all programs so far have simply had one command per line. It is possible to join several together

on one line (though it is not good practice to make long lines like this) by putting a colon between each item. For example:

```
100 CLS #0 : AT #0,2,0 :  
PRINT #0,"This is window #0"
```

Listings

Let us now move on to a few simple example program listings. Listing one acts as a simple shop calculator, where you are asked to enter a price for one item, then the number of items sold and displays the total price. Please note: when entering a price, do not enter a currency unit such as \$ or £, as it will confuse the program and cause an error. The simplest way of allowing the currency unit to be displayed is to add it to the end of the text after the input statement, something for you to work out how to do! Note the REMark statement at the start of the program - this is simple a comment or remark to help you remember what the program does. Anything after the REMark statement is ignored by the computer, it is just there to remind you. The * symbol in the print statement is the computer's 'multiply' symbol showing you want it to multiply the two numbers in the variables together before printing them.

Listing two shows how to set the QL's built-in clock and show it continuously as a digital clock display on the screen. The SDATE command is used to set the six parts of the time (year, month, day, hour, minute and seconds) and the DATE\$ command is used to display the time and date in standard QL format. The REPEAT and END REPEAT commands are used to make the program execute a part of itself continuously and will be dealt with in a later instalment. Briefly, REPEAT carries on doing the statements between REPEAT and END REPEAT until you press Ctrl-Space to break out of it. The variable name "show.time" is simply a means of identifying the loop, not important here, but vital in large programs where there may be several REPEAT statements!

Saving

At this point, we must learn how to save these programs on disk or cartridge for future use, especially the ones which have some degree of usefulness!

We save these programs by deciding on a name for them and using a SAVE command. The rules for a name are the same as those for a variable name (must start with a letter or underline and may include underlines and numbers - underlines are used because it is not practical to use spaces in most cases because the computer would not know if the space was a gap between this command and the next or a part of the name). Names can be used in quote marks or without quote marks and should start with the name of the drive on which they are to be saved (mdv1_ or mdv2_ for microdrives, FLP1_ or FLP2_ for floppy disks, for example). It is often a good idea to make the name end with the same three or four characters to allow the files of a particular type to be spotted at a glance when you look at the content of a disk or cartridge with the DIR FLP1_ or DIR MDV1_ commands. I normally save my Basic programs with names ending with '_bas' (which is short for Basic of course). So these might be saved like this:

```
SAVE mdv1_PRICES_bas
```

or

```
SAVE 'MDV1_prices_bas'
```

```
SAVE mdv1_TIME_bas
```

or

```
SAVE 'MDV1_TIME_bas'
```

Loading

To use them again in future, we use the LOAD command, followed by a filename, eg LOAD mdv1_PRICES.bas. If you put the filename in quote marks, you can use characters which cannot normally be used, though this is not good practice!

Listing three contains a simple typing tutor which displays a letter or number on the screen and asks you to copy it. Once you have found the key on the

keyboard, type it in and press Enter. The computer will tell you if you got it right or wrong. Since it asks for either lower case or upper case letters, you must use Shift when it asks for a capital letter or it will say you got it wrong! This program is obviously of no use if you are already familiar with the keyboard layout, but if you spend a lot of time looking for a character on the keyboard, using this program will teach you quite quickly where everything is through trial and error. Notice how it uses an IF ... ELSE ... THEN construct to make the decision if you are right or wrong by comparing the character displayed with that entered to see if they are equal to each other. The keyword RND is used to select a character from k\$ at random. There are 62 characters in k\$ (lower case letters plus upper case letters plus numbers) and the RND statement simply picks a character from 1 to 62 in the string.

String slicing

You can pick out a given part

of a string by putting the positions in brackets after the string, e.g. LET a\$ = b\$(3 TO 6). This is called string slicing, another topic to be discussed in a later issue. The PAUSE command used is simply a delay to allow a message to be shown for a given time (units are one-fiftieth of a second, so pause 100 is for 2 seconds). Note the INPUT statement which displays one variable by enclosing it in brackets to stop INPUT asking you to enter it instead of displaying it, and asks you to enter another variable. This is a good example of the power of QL SuperBasic allowing you to do several complex things in one fairly short statement.

Type in, use and modify these programs to get the maximum benefit from them to learn about Basic. Although there are some parts in them which contain elements we have not yet discussed, they should be fairly obvious especially if you study the user guide at the same time - you might find yourself making progress faster than these articles!

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Archive Answers

Standard Deviations

In Archive Answers this month we are going to have a dip in to the arcane world of statistics, and in particular that shady character, the standard deviation. This is a topic that tends to be restricted to United Nations Statistical digests and university undergraduates, so if you have trouble understanding it, dig out that old jumper with the holes in it and the curry stains, have a few beers, and come back to it after midnight. You'll be amazed at the difference it makes.

If you have dealt with stats before you may remember that the **standard deviation** has a more upright brother called the *normal distribution*, and a black sheep in the family called *Mean*. Mean is the best known, normally called *average*. That name makes statisticians froth at the mouth, but we can't help that. We know about averages, and regularly calculate them for all sorts of things: average price, average goal difference, or whatever. You just add up all the values and divide by the number of items. Easy.

But knowing the average (or mean) is only part of the story. It doesn't tell you how the actual values are distributed *around* the mean. For example, the average of 9 and 11 is 10, but so is the average of 19 and 1. This is where the normal

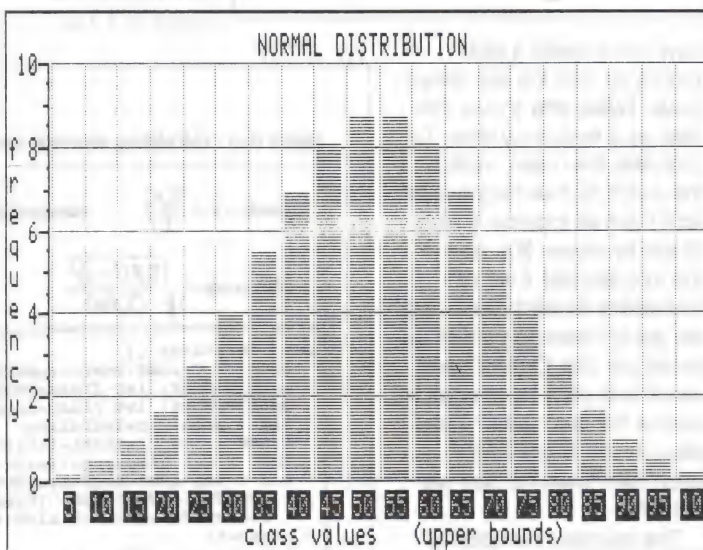
distribution comes in.

In all sorts of realms of study, there are data sets which have this normal distribution. There are also many that don't, but we shan't worry about them. Graph

standard deviations come in.

But before we come on to that, we'll look at how to make our own normally distributed data.

Creating data



one shows the shape of this normal distribution on a frequency chart. Most of the values occur very close to the mean, with the frequency tailing off symmetrically above and below it. People have discovered all sorts of useful things you can deduce if you know your data is normally distributed. It is here that

Statisticians are always being accused of creating data to fit the result they want. In our case it is a useful way to get a feel for normally distributed data.

The way to do it is to use the formula in **figure one**. It is the sort of formula that weakens the firmest resolve, full of Greek letters, arithmetic constants, and so on. But fear not. With the help of *Archive*, it can readily be brought under control. One reason for this is that *Archive's* ancestry can be traced in large part back to Fortran, the computer language devised specifically for formula translation into computer-usable code.

What the formula does is provide a value for 'Y' from any given value of 'X'. On the frequency chart (graph one), x is the class value along the bottom, and Y is the

frequency with which that value will occur. So you need to perform the calculation on each value of x you require.

'Pi' and 'e' are both mathematical constants. (*Archive* has the function 'exp()' to provide e to the power of a number, and 'Ln()' to do the opposite.) The other two symbols are \bar{x} (the x with a hat on) which denotes the mean; and the lower case sigma (the o with a spout) which denotes the standard deviation. The secret in formula translation is to break the formula down to its simplest elements, calculate these, and then make sure they are combined in the right order.

For any given data set you can choose the *mean* and the *standard deviation*, and calculate any value of Y. The

figure one - creating normally distributed data

$$Y = \frac{1}{\sigma\sqrt{2\pi}} \cdot e^{-z^2/2} \quad \text{where } z = \frac{(x - \bar{x})^2}{2\sigma^2}$$

```
proc getnormal
  let standev=18
  let mean=50
  let samplesize=80
  let interval=5
  let min=0
  let max=100
  let class=min+(interval/2)
  let pt1=1/(standev*sqrt(pi*(.2)))
  let pt3=(2*(standev^2))
  kill 'normal.dbf': create 'normal'
  label $:less than: normal: endcreate
  while class<=max
    let pt2=(abs(class-mean)^2)
    let answer=pt1*exp(-(pt2/pt3))
    let less than: answer=(interval/2)
    let label $:answer,2,6)
    let normal=answer*samplesize*interval
    append
    print less than:dec(normal,10,20)
    let class=class+interval
  endwhile
  export 'normal':label$,normal
endproc
```

results will all be very small numbers, because the equation is such that the total area under the graph will equal one. To turn it into a bar on a graph it must be multiplied by the width of the bar (the range of each data class). And to give a sensible vertical scale you must decide

HELP	COMMANDS	create	look	open	close	COMMANDS
----- F1	delete	display	back	alter	find	----- F3
PROMPTS	first	insert	last	next	quit	ESCAPE
----- F2	type command & press ENTER (F3 for more)					----- ESC

calculating...

Grouped frequency statistics on frequency

```
6 classes of 1.0
number of values =      11
sumation of values =    39.5
arithmetic mean =      3.5909090909091
standard deviation =    1.0833068443466
-2S.D. -1S.D. Mean +1S.D. +2S.D.
  1.4   2.5   3.6   4.7   5.8
skewness =      -0.18083767298505
(symetrical distribution = 0)
kurtosis =      2.4607220789526
(normal peakiness = 3)
```

```
>look "potato"
>fstats; 'frequency', 'yield'
```


what is to be the total number of samples in this hypothetical data set, and multiply the result by that as well.

Play around!

The listing for *proc getnormal* in figure one does all of these things, and creates a data file called 'normal_dbf' to contain the x and Y values - here named 'lessthan' and 'normal'. It also includes a text field called 'label\$', so that the results can be automatically exported. After running *getnormal* you can import the data into *Easel*, to give a good visual idea of the results.

Once you have got it running correctly you can try varying some of the starting parameters. Changing the standard deviation will make the shape wider or thinner; while changing the mean will shift the whole lot left or right. Changing the sample size will alter the vertical scale, and changing the interval will give fewer, wider bars, or more narrow ones. The min and max values decide the parts of the graph to be calculated. In theory you could calculate to infinity in either direction without the Y value actually reaching zero. In practice it will soon be so close that neither you nor Archive can tell the difference.

Deviations

Given that we know what the mean is, what is this standard deviation thing doing? If you were to draw a vertical line at the mean plus the standard deviation, and another at the mean minus the standard deviation, you will have enclosed 65% of your data samples between the two lines. That is true of all normally distributed data.

And if you were to do the same at the mean plus and minus two times the standard deviation, it will enclose 95% of the samples. So if you know the mean and the standard deviation you can assess how abnormal any one data value is. Alternatively, you can decide what likelihood of occurrence is acceptable, and deduce from that what value you need to be within.

An example may help. You are charged with allocating

scarce farmland to *potato*-eating peasants. Each farmer must be able to grow at least four sacks of potatoes each year to avoid starvation. The land is divided into plots, and you have data on

table one -
frequency of potato yields

Number of sacks harvested per year	Number of years the yield is reached
'lessthan'	'frequency'
1	0
2	1
3	2
4	4
5	3
6	1

how many sacks a plot produced over the last eleven years. **Table one** shows this data as a frequency table. To calculate the mean, multiply the yields by their frequencies, add them all together and divide by eleven (the sum of the frequencies). If we use mid-points for each yield class we get an average yield of 3.6 sacks per plot. On that basis, would two plots be enough to survive the lean years? If you allocate too much land to each then fewer farmers will benefit.

The standard deviation of this data is calculated as 1.1, so if we deduct twice this value from the mean it will show the minimum yield in 97.5% of years (the 95% between the two lines, plus the 2.5% above the top one). This gives a yield of 1.4 sacks, so to get four sacks the peasant would need three plots. And that still leaves a little cushion of 0.2 sacks for the awful 2.5% of years we haven't allowed for.

Calculating

How do we calculate the standard deviation? **Figure two** shows the equation used for grouped frequency data such as this. First the mean (bar-x) must be calculated, using the method already described, and then the main equation. The big M on its side is an upper case 'sigma'. It denotes 'add together for each of the values in the data set'.

This formula requires two passes through the data. Firstly the mean is calculated, and then the mean is used during the standard deviation calculation. There are alternative equations which would do it all in one pass, but they cannot be used by the other two similar looking equations, for *skewness* and *kurtosis*.

These two strangely named statistics are useful in establishing the 'shape' of the data. The skewness measures how symmetrical the shape is. If it is

negative the bulge occurs above the mean, and if the skew is positive, most of the values are grouped below the mean, with a long 'tail' of a few larger values. Kurtosis on the other hand measures the shape of the peak. If it is tall (more values than 'normal' clustering in one or two classes) the kurtosis will be greater than three. If it is flattened, with a more dispersed data set it will be less than three. These two values provide a good test of whether data is normally distributed or not. The figures don't depend on the size of the data values. If they stray from their norms by 0.8 or so, the normality of the data is in doubt (the larger the data sample the closer they should be to their norms if the data is to be

figure two - calculating standard deviation from a frequency table.

$$\text{mean} = \bar{x} = \frac{\sum fC}{\sum f}$$
$$\text{skewness} = \frac{\sum f(C - \bar{x})^3}{(\sum f)\sigma^3}$$

$$\text{standard deviation} = \sigma = \sqrt{\frac{\sum f(C - \bar{x})^2}{\sum f}}$$
$$\text{kurtosis} = \frac{\sum f(C - \bar{x})^4}{(\sum f)\sigma^4}$$

```
proc fstats; n$; c$
  local f, C, sumF, sumFC, sumFC2, sumFC3, sumFC4, ClassInt
  getfield; n$: let field=answer
  getfield; c$: let class=answer
  cls : print "calculating..."
  first : let ClassInt=fieldv(class)
  next : let ClassInt=fieldv(class)-ClassInt
  all : let sumF=sumF+fieldv(field)
        let C=fieldv(class)-(ClassInt/2)
        let sumFC=sumFC+(fieldv(field)*C)
      endall
  let mean=(sumFC/sumF)
  all : let f=fieldv(field)
        let C=fieldv(class)-(ClassInt/2)
        let sumFC2=sumFC2+(f*abs(C-mean)^2)
        if C-mean>0: let sumFC3=sumFC3+(f*((C-mean)^3))
        else : let sumFC3=sumFC3-(f*(abs(C-mean)^3))
      endif
        let sumFC4=sumFC4+(f*(abs(C-mean)^4))
      endall
  let heading$="Grouped frequency statistics on "+n$
  let info$=str(count(),2,0)+" classes of "
  +str(ClassInt,0,1)
  let nvalues=sumF: let sum=sumFC
  let standev=sqr(abs(sumFC2/sumF))
  let skewness=sumFC3/(sumF*(standev^3))
  let kurtosis=sumFC4/(sumF*(standev^4))
  spoolon screen :output: spooloff
endproc
```

```
proc getfield;n$
  let answer=0: while answer<numfld()
    if lower(n$)=lower(fieldn(answer)): return : endif
    let answer=answer+1: endwhile
  print : print "Error : field name not found": stop
endproc
```

```
proc output
  lprint tab 17; heading$: lprint tab 10; info$
  lprint tab 10; "number of values =": tab 40; nvalues
  lprint tab 10; "sumation of values = ": tab 40; sum
  lprint tab 10; "arithmetic mean =": tab 40; mean
  lprint tab 10; "standard deviation = ": tab 40; standev
  lprint tab 15; "-2S.D. -1S.D. Mean +1S.D. +2S.D."
  lprint tab 13; : let sd=-2*standev
  while sd<3*standev: lprint dec(mean+sd,1,7);
    let sd=sd+standev: endwhile : lprint
  lprint tab 10; "skewness =": tab 40; skewness
  lprint tab 20; "(symmetrical distribution = 0)"
  lprint tab 10; "kurtosis =": tab 40; kurtosis
  lprint tab 20; "(normal peakiness = 3)"
endproc
```


considered normal).

The three procedures listed in figure two enable calculation of these formulae. To use them you need an open data file, and call 'fstats' (standing for frequency statistics) from the Archive prompt. Two field names are needed as parameters. The first is the field holding the frequency data; the second should contain the upper limits of each class. Both must be in inverted commas, separated by a comma. Fstats can be used by any data file containing such information. The results are initially sent to the screen (as shown in the screen dump), but can also be sent to the printer afterwards by entering 'output' at the Archive prompt.

If you create a data file with fields for 'lessthan' and 'frequency' and insert the data in table one you can test the procedure by entering:

fstats;'frequency','lessthan'

You should get results like those in the screen dump. You can also use fstats to test the data you created using getnormal. In this case the mean and standard deviation should end up close to your starting values, with a skewness near zero, and a kurtosis near three. If these are more than a tiny fraction out (due to rounding at 14 significant figures!) you should re-check your typing.

Raw data

Data doesn't always arrive in

frequency table form! More often than not it will start as a large number of individual numbers. To analyse such data we can either group it together into

option as before. This time only one parameter is needed - the name of the numeric field to be analysed. Table two provides another example, with two sets of figures. The scenario is a high-powered electronics company, building control equipment for critical applications. The customer's order specifies a mean repair time of 20 minutes, but also that 97% of faults must be repairable in 38 minutes. No doubt they have their reasons. (The nuclear core melts if the electronics are down for 40 minutes, say.) Your engineers produce two rival designs, design A being

substantially cheaper to make. Will it fit the bill? Table two is the repair time of all the components. If you enter the figures into a database and run each design through stats you

Hidden inside

You can try stats on some other data you may have. The 'Gazet' database supplied with Archive provides data on the population of the countries of the world, in the field 'pop'. What happens if you use this? The mean looks good, but the other data is haywire. The frequency graph of the data, shown in graph two may explain why. There are lots of very small countries, and just a few huge ones (some well off the scale of this graph). However, believe it or not, there is a normal distribution hidden somewhere inside these figures. They just need 'transforming' to bring it out. The population distribution, along with all sorts of unlikely bedfellows, has a 'log-normal' distribution. Proc transform in figure four creates a new database containing the population figures expressed as natural logarithms. If you perform a stats analysis on the transformed data, low and behold the figures indicate a normal distribution.

You need to be aware that

table two - component repair times

Component code	Repair/replacement time (minutes)	
'partS'	'designA'	'designB'
A	25	33
B	8	12
C	34	24
D	12	7
E	21	18
F	45	16
G	2	23
H	27	20
I	16	26
J	14	27

frequency form, or perform the calculations directly. We shall look at ways to do both of these, starting with the latter. Figure three shows a set of formulae similar to those in figure two. However, instead of C, the class value, we have x, the data itself. And there is no figure for f, as each value represents just itself, instead of a group of values represented by each frequency entry.

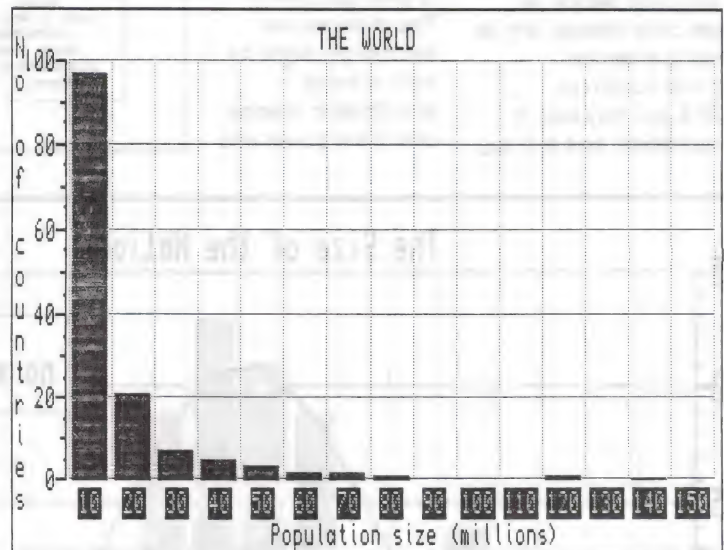
figure three - standard deviation using raw data

```
mean =  $\bar{x} = \frac{\sum x}{n}$  standard deviation =  $\sigma = \sqrt{\frac{\sum (x - \bar{x})^2}{n}}$ 
skewness =  $\sqrt{\frac{\sum (x - \bar{x})^3}{n\sigma^3}}$  kurtosis =  $\sqrt{\frac{\sum (x - \bar{x})^4}{n\sigma^4}}$ 

proc stats; n$
  local sumX, sumX2, sumX3, sumX4, min, max
  getfield; n$: let field=answer
  cls : print "calculating ..."
  let min=9.E+37; let max=0
  all : let xbar=fieldv(field)
  let sumX=sumX+xbar
  if min>xbar: let min=xbar: endif
  if max<xbar: let max=xbar: endif
endall

let nvalues=count()
let mean=sumX/nvalues
all : let xbar=fieldv(field)-mean
let sumX2=sumX2+abs(xbar)^2
if xbar>0: let sumX3=sumX3+(xbar^3)
else : let sumX3=sumX3-(abs(xbar)^3)
endif
let sumX4=sumX4+(abs(xbar)^4)
endall

let headings$="STATISTICS ON "+upper(n$)
let info$="range : "+str(min,2,0)+" to "+str(max,2,0)
let sum=sumX
let standev=sqr(sumX2/nvalues)
let skewness=sumX3/(nvalues*(standev^3))
let kurtosis=sumX4/(nvalues*(standev^4))
spoolon screen :output: spooloff
endproc
```



The listing contains just one procedure, stats, which uses two of the procedures already typed in. It has the same output

should find that both just about meet the 20 minute average. However the 97% figure (mean plus two standard deviations) for design A is nearly 45 minutes, by which time things are getting too hot to handle. Design B on the other hand fits it in at 35 minutes, leaving three minutes to find that lost screw.

they are now log results, and to make sense they need anti-logging with the exp() function. When to anti-log is of prime importance here. In particular if adding or subtracting standard deviations the logged figures are used, and the result anti-logged. For example, you are charged with dividing up an ex-communist state into its

constituent ethnic groups, but the UN has decided the units must not be smaller than 80% of the world's countries. You will find that the log-mean minus the log-deviation equals 13.8. Anti-logging this reveals that provided you ensure a million people per country you will be above 82%. (65% between the first standard deviations, plus 17.5% above that.)

Frequency form

We can further verify that the data is normal by graphing the result. To do this the procedure 'group', in figure four, will produce yet another file, this time grouping the log-population data into frequency form. As with all 'derived' data the file can be regarded as temporary. To save file space you can safely delete everything except the raw data (in this case `gazet.dbf`) and the program file. The other files can all be easily regenerated at any time.

It would be a fairly simple matter to adapt *proc group* to do the same for any raw data. The lines you may need to customise are marked with numbered arrows. Number 1 is simply the name of the source file. At 2 you must decide an appropriate class interval, and at 3 you need to enter the minimum and maximum classes. At 4 you may wish to alter the text labels, and at 5 you

must enter the name of the field to use in the source file.

Proc group produces both a data file, and an export file, this time called `summary_exp`. Importing this to Easel should produce something like graph three, here shown with an additional *completely normal curve*, generated by *getnormal* using the same mean and standard deviation. For all the usefulness of the various figures we have produced, there is probably no substitute for the old eyeball method for getting to grips with a set of numbers.

TO DO LIST UPDATE

Archive enthusiasts of long-standing will remember the *Archive Power* series a couple of years ago, which built up a set of "desktop" tools. The final instalment, in October 1990, was for a To Do List and Diary. The request has come across the North Sea for a modification. Instead of just showing one day's diary entries they wanted to show a week or more of appointments on one screen. I present here the modified version of *proc LISTDRAW*. The changes are surprisingly slight, for such a major specification change, due to the power and

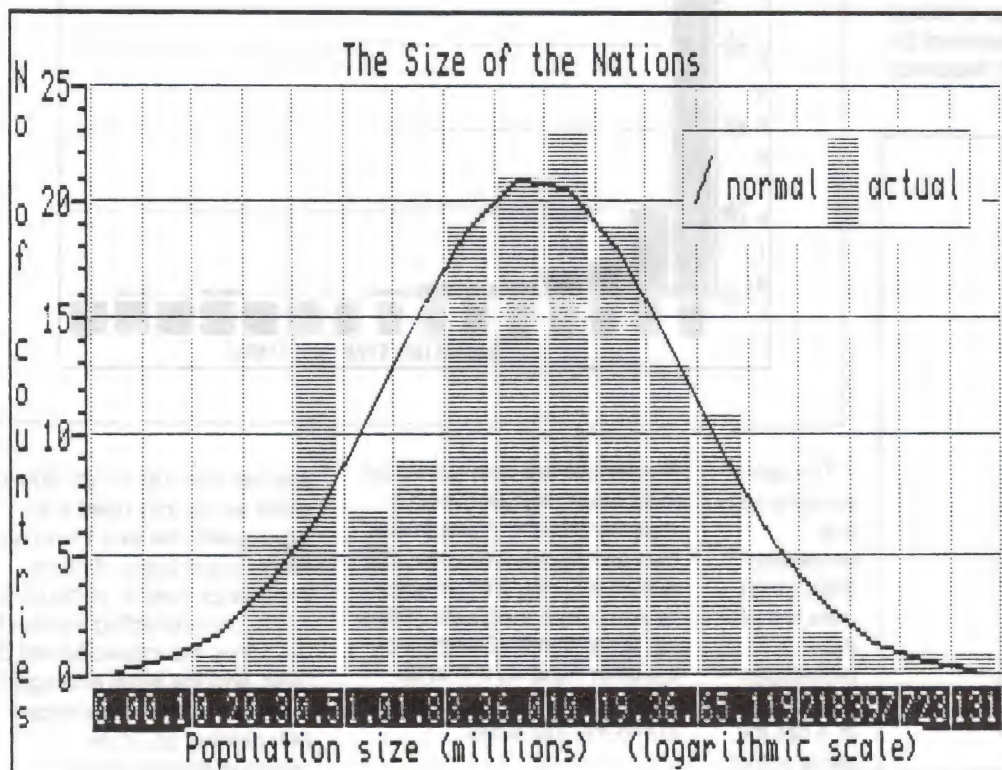
figure four - transforming and grouping data

```
proc transform
  create "popln" logical "ln"
  pop: endcreate
  look "gazet" logical "source"
  all "source"
    let ln.pop=ln(source.pop*1000000)
    append "ln": endall
  close "ln": close "source"
  print "finished."
endproc

proc group
  look "popln" logical "source":rem <=== 1
  kill "summary_dbf": print "creating..."
  create "summary" logical "sum"
    label$:lessthan:frequency
  endcreate
  local interval: let interval=0.6:rem <=== 2
  let count=11.4: while count<=22.2:rem <=== 3
    let label$=str(count,0,1):rem <=== 4
    let lessthan=count
    append : let count=count+interval
  endwhile : order lessthan;a
  print "calculating..."
  all "source"
    use "sum": locate (source.pop):rem <=== 5
    let frequency=frequency+1: update "sum"
    print recnum("source")
    use "source": endall
  close "source": print "exporting..."
  use "sum": export "summary":label$,frequency
endproc
```

Modified procedure for To Do List. Altered and inserted code is shown in bold.

```
proc LISTDRAW
  local FROM,UPTO: let FROM=days(CURRENT$): let UPTO=FROM+6
  DATEFORMAT;CURRENT$: print HEADINGS
  if CURRENT$=date(0): let ANSWER$=ANSWER$+" **TODAY**": endif
  print at 4,0: ink 0: paper 4:" ";ANSWER$: tab 75;LISTWINDOWS
  cls : if REDRAW=2 and count(): reset : order DAYS;A,PRIORITY$;A
  if CURRENT$<=date(0): select DAYS<=UPTO
    else : select DAYS>=FROM and DAYS<=UPTO: endif : endif
  last : while recnum()>0
    LISTLINE;0: print ink 3+(DATE$=CURRENT$);ANSWER$:chr(22)+chr(1);
    back : endwhile
    LISTLINE;0: print ANSWER$;
  endproc
```



flexibility of *Archive*.

There are two other changes needed in addition to the emboldened parts of *LISTDRAW*. You need to add a line to *proc LISTLINE*. Immediately below the line that says 'if count()>0' you should add the line:

```
if DAYS and
DAYS<>days(CURRENT$): let
PRIORITY$=DATE$(6 to ): endif
```

And at the end of the 7th line of *proc LIST*, you should change it to read:

```
let
colour=3+(DATE$=CURRENT$)
```

And that is all there is to it. You can choose how many days ahead you want to include on your screen, by editing *Listdraw*, and changing the last number of the first line. As shown here it will list entries for six days ahead of the current date. You could add an option to set this value from within the program with a bit more effort.

This month's SuperBasic loader generates the resident version of HPDUMP. Next month I shall present code for a version that suits EXEC and CALL. Both code files are based on the same source. This month Listing One shows the parameter handling and initialisation routines. Next issue I shall

Top notch page printers recognise Postscript, a symbolic, interpreted graphics language, but this is greedy for memory and processor power, so it is only supported by the most expensive printers. But almost all page printers recognise Hewlett Packard's 'PCL' Printer Control Language, so that is the new standard addressed by

24 DIY Toolkit volumes are now available on disk and microdrive, at a new flat rate of £3 each on 3.5 or 5.25 inch Qdos disks, or £4 per volume on cartridge. Order two or more volumes to receive printed documentation at no extra charge. To obtain volumes, or further information, write to the new *DIY librarian Dr. Bill Fuggle at DIY Toolkit, 86*

Most QL Assemblers support conditional code, including HiSoft's Devpac, Metacomco's ASM and GST's Macro Assembler. If yours does not, you must decide whether you want the task or resident version, and enter only those lines marked IFEQ (for the task) or IFNE (for the extension).

If all else fails, pick the task code and use Task Commander, from DIY Toolkit Volume F, to convert it into a keyword - but this will use more code and slightly different syntax, as the task version expects to find the "I" indicator inside the parameter string.

When the task starts there are at least two words on the stack,



HPDUMP has been carefully tested on my £300 DeskJet 500 printer, and Dr Bill Fuggle's upmarket LaserJet 2. It should suit all page printers that accept PCL codes. It can 'dump' Mode8

SINOLIA ISSUE WORLD 27

This esoteric observation concludes the discussion of Listing One, which will be completed next issue with code to talk to the printer. Further notes appear in the DIY disk files and my next column.

Once the file `FLP1_HPDUMP_CODE` (or

A full screen dump generates 85-100K of data. HPDUMP needs little more than a second to work this out from the QL screen, but it takes a couple of minutes to squirt it out through Sinclair's slow serial ports. HPDUMP goes twice as fast if you have a parallel port, capable of sending eight bits at a time to the printer. It should work faster still if your printer out-performs my Amiga Qdos/DeskJet 500 combination.

Last minute bodes mean

DIY Toolkit - HPDUMP hex loader - LISTING 2

```

100 REMark Sinclair QL World HEX LOADER v 3a
110 REMark by Marcus Jeffery & Simon N Goodwin
120 :
130 CLS: RESTORE : READ space: start=RESPR(space)
140 PRINT "Loading Hex..." : HEX_LOAD start
150 INPUT "Save to file...";f$
160 SBYTES f$,start,byte : STOP
170 :
180 DEFine FuNction DECIMAL(x)
190 RETurn CODE(h$(x))-48-7*(h$(x)>"9")
200 END DEFine DECIMAL
210 :
220 DEFine PROCEDURE HEX_LOAD(start)
230 byte = 0 : checksum = 0
240 REPEAT load_hex_digits
250   READ h$
260   IF h$="*" : EXIT load_hex_digits
270   IF LEN(h$) MOD 2
280     PRINT"Odd number of hex digits in: ";h$
290     STOP
300   END IF
310   FOR b = 1 TO LEN(h$) STEP 2
320     hb = DECIMAL(b) : lb = DECIMAL(b+1)
330     IF hb<0 OR hb>15 OR lb<0 OR lb>15
340       PRINT"Illegal hex digit in: ";h$ : STOP
350     END IF
360     POKE start+byte,16*hb+lb
370     checksum = checksum + 16*hb + lb
380     byte = byte + 1
390   END FOR b
400 END REPEAT load_hex_digits
410 READ check
420 IF check <> checksum
430   PRINT "Checksum incorrect. Recheck data.":STOP
440 END IF
450 PRINT "Checksum correct, data entered at: ";start
460 END DEFine HEX_LOAD
470 :

```

that the QL screen is stretched horizontally, which is why its leftmost columns disappear into the margin of many TV screens. HPDUMP needs to compensate for this to preserve the shape of printed screens, so the vertical scale factor averages 2.5 dots per pixel.

This means that circles generated by Easel and SuperBasic still appear round when printed. Next issue I shall explain how to control the aspect ratio; the 4:3 variant gives stretched 'circles', slightly larger dumps and neater grey tones. The accompanying example shows the Speculator help screen, at three dots per pixel, while the sample screen in this month's SuperBasic in Action column averages 2.5 dots per pixel.

HPDUMP can take an optional channel or a string parameter. If a channel is supplied HPDUMP sends output to the channel, leaving it open for further use when it has finished. Thus you can build up a file of text and graphics on any drive:

```

OPEN NEW
#3,RAM1.REPORTLBYTES
FLP1.PROFIT.SCREEN.131072
HPDUMP #3PRINT #3;"Profits

```

```

for 1991-92"\\BYTES
FLP1_FUTURE_SCREEN,13107
2HPDUMP #3PRINT
#3;"Projection for
1993"CLOSE #3

```

This sequence generates a file RAM1_REPORT of about 200K, incorporating two screens with text captions. You can print this file any number of times by copying it to your printer device. The screens are 32K ram images, generated by saving the image from display memory. You can make such files with this SuperBasic command:

```

SBYTES
FLP1_FUTURE_SCREEN,13107
2,32768

```

Alternatively, use Dilwyn Jones' multi-tasking Screen Snatcher utility, or generate the screen file with a graphics program like Easel, Eye-Q or The Painter.

Economies

By default HPDUMP sends an half-page image (just within A5) to the printer. The smaller 300 DPI image lets you fit eight

on one A4 page, with a little room left for captions. My DeskJet saves time and ink if I select 'draft' output, but this skips some dots so green and white pixels are almost indistinguishable in a small draft printout.

Printer paper is most often white, and screen backgrounds are usually black, so HPDUMP defaults to an 'inverse' image, with black and white transposed, substituting light grey for red and dark grey for green. If you have plenty of ink or toner you can get true grey scale by adding an exclamation mark after the command, eg:

```

HPDUMP !HPDUMP
#3!HPDUMP "PARF"!

```

select draft before generating a small dump at 300 DPI, particularly with absorbent paper on an inkjet printer. This should not happen if you select the larger 150 DPI image or use a laser printer.

The full image distinguishes all QL colours by the use of shading. HPDUMP can also be used to generate full-colour printouts if you have the necessary coloured ink or toner cartridges. I shall return to this topic next month.

Coming soon

My next column will reveal the code that converts a QL screen into printer control codes, and the multi-tasking version, HPDUMP_TASK, which can also be used as a replacement for Psion's GPRINT_PRT in programs that CALL that code. As ever I'm

```

580 REMark Space requirements for the machine code
590 DATA 484
600 :
610 REMark Machine code data
620 DATA "43FA01D030780110","4ED07A00BBCB6758"
630 DATA "7038C033E801B03C","002066027AFF4A33"
640 DATA "E8016B1230780116","4E90663653436630"
650 DATA "20494E4460363078","01124E9066245343"
660 DATA "661E3031E8006B18","C0FC0028D0AE0030"
670 DATA "BOAE00346C062036","08006A0870FA4E75"
680 DATA "70F14E7520406014","41FA01467E0072FF"
690 DATA "760070014E424A80","660001042C08223C"
700 DATA "0000028074FF7018","4E412800660000EA"
710 DATA "2A4845ED0080287C","00Q2800070004E41"
720 DATA "102800346B0449EC","8000204676FF43FA"
730 DATA "01103419610000DA","264A43FA00E4700F"
740 DATA "720F3400E94AD441","D44218310000E14C"
750 DATA "D831100037842000","51C9FFE851C8FFE2"
760 DATA "3C3C00FF703F264D","7200121CD2413432"
770 DATA "1000D4427200121C","D24184721000BB42"
780 DATA "36C251C8FFE46178","49ECFF80703F264D"
790 DATA "72001214D2413432","10007200121CC21C"
800 DATA "D24132321000D241","8441BB4236C251C8"
810 DATA "FFE0614C08060000","662A49ECFF80703F"
820 DATA "264D7200121CD241","343210007200121C"
830 DATA "D24132321000D241","8441BB4236C251C8"
840 DATA "FFE2611C51CEFF7E","78004A876B0E6608"
850 DATA "C14D70194E41C14D","70024E4220044E75"
860 DATA "43FA003434196110","660A224D343C0080"
870 DATA "6106670A588F60D2","70074E4328004E75"
880 DATA "0001040510111415","4041444550515455"
890 DATA "0004534552310007","1B2A623132385700"
900 DATA "000F1B2A74313530","521B2A7231303234"
910 DATA "53000001FE360648","5044554D50000000"
920 DATA "00000000","*",38996

```

Note that solid ink in draft printouts can look rather streaky. Narrow white lines surrounded by big black areas may disappear unless you

keen to hear your experiences and suggestions about DIY Toolkit projects; please write to me, care of QL World.

**Henry Orlowski
mixes text and
pictures with a low-
price importing
program.**

INFORMATION

Program: Text'n'Graphix

Price: £20 (demo version £2)

Supplier: Dilwyn Jones

Computing, 41 Bro Emrys, Tal-Y-Bont, Bangor, Gwynedd LL57 3YT.

Requirements: 3.5in disk driver, Epson compatible printer.

All QL users have a wordprocessing package even if it's only *Quill*. Many use a graphics program even if it's only *Easel*, or perhaps they are familiar with the QL's graphics capabilities and screen save facilities. Some may quite like a relatively inexpensive method of putting their graphics within their text in a single printout without having to go to full blown desktop publishing (DTP) and having to learn totally new processes from scratch.

Text'n'Graphix (TnG) is a designed to control and enhance your printed text output and to mix graphics into it. The final effects can approach that of DTP. Unlike a self-contained DTP package, TnG relies on separate textual and graphical input from different programs which it can then 'grab' and combine into a single printout, although it will not actually display your mixed text and graphics output on screen.

Let's take first the graphics part of the program, as this is probably the major attraction to the potential user.

Grabbing

This is not a graphics program. It will not in itself allow you to create pictures. What it will do is allow you to either load screens saved previously, or to multitask with other graphics programs from which you can save a display. If you're loading a saved screen, remember that most graphics packages have two screen-save alternatives. The default one is usually the compressed or contracted one. These use much less disk space, but most compression routines are different, which

means there is little or no compatibility between different screen files. TnG therefore does not load these (unless it's one of its own). If you do try to load a compressed file, all you will get is a top portion of the screen filled with a random colour pixel arrangement.

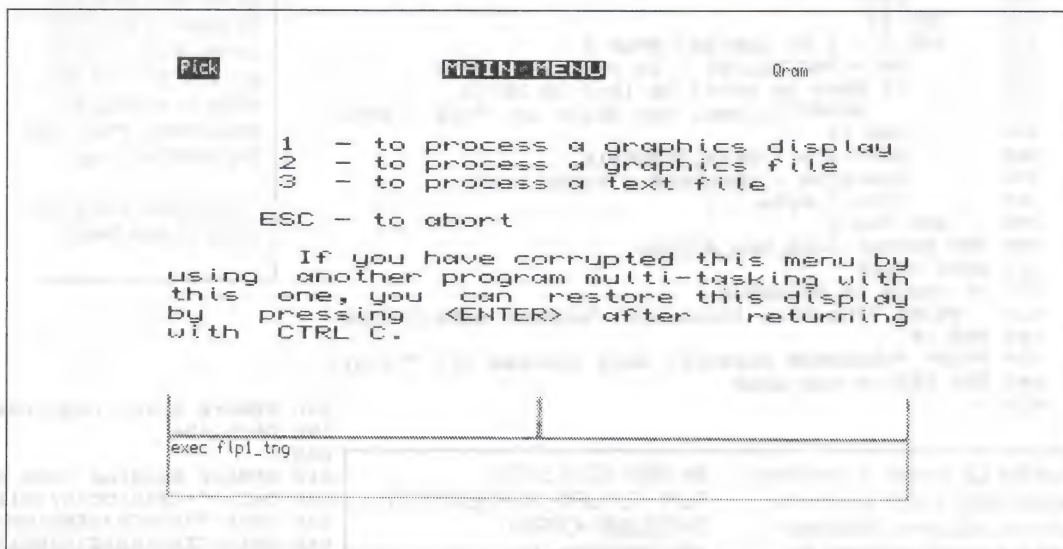
The screen save method you

change its size. This takes a little getting used to, but you soon get the hang of it.

Options

Once you have decided on the part of the screen you want you can do three things to it. Firstly, you can just dump it to

editor. You key in your text and intersperse it with the TnG control codes. These control codes represent the various printer functions that allow you to achieve special effects within your documents. They are vital because they are recognisable to the TnG printer driver which will then implement the function



should opt for is the screen byte format and most programs give you this option. This saves the screen in the same way as the SBYTES command or as printing, say, an Easel screen dump to a file.

TnG also handles any differences between the mode the screen was saved in and the mode you are currently running in. If you get the odd strange effect on screen, compensation is made so that any final printout is correct.

If you haven't got a saved screen to load you may choose to multitask with a separate graphics program using Ctrl-C to switch between them. Switching back to TnG once you have got your display ready allows you to capture the display or part of it, in the same way as you can with a saved screen. TnG gives you a movable, resizeable XOR'd block to enable you to define the portion of the screen for processing. You use Ctrl or Alt plus the arrow keys to move the block around the screen and to

the printer. Secondly, you can store it for later use as a TnG contracted file. The third option is the one you will have selected if you wish to use the graphics within a text document. This option not only stores it as a contracted file but creates a special insert file which can be subsequently placed within a document. A fourth option allows you to do all three.

If you have stored a contracted TnG file you can call it up to make any further modifications to it. Typical modifications include altering the height and/or width of the display, or storing several smaller sections from the same display. Once you have completed the task you can again either dump to printer, create a new contracted file(s), or create a special file for insertion into a document.

That covers the graphics part. Now let's look at the text part. Like the graphics, you don't use TnG to create the text part. What you have to do is load up your favourite wordprocessor or

on your printer. You can put in as many control codes as you can fit in and are practicable, and you can change the effect you give to your text even on a line by line basis.

In use

What are these functions that the control codes can implement? I'm not going to list all 108 of them, but I will give an example of how they can be used. Take your document. You want the title to be bold and enlarged. Just put in the appropriate control codes for that. Then you want to revert to normal size text but NLQ, so put in those codes. Then there are some sections that you want to highlight by making them italic. Easy. Then some notes sections that you want in condensed print with reduced margins. Do it. TnG will happily handle it for you.

Don't be put off by the prospect of having to key in these control codes. After a short while they become second

SIMPLE TnG EXAMPLE

Just a simple example to see if we can mix text with pix.
Put the picture in here:



nature. The manual lists all those that are implemented, about 108 of them, most of which are likely to be available on your printer if it is Epson-compatible. If it is not or it varies in some way from the standard then it is a relatively straightforward operation to set up the control codes that your printer will recognise. (Note however that Epson

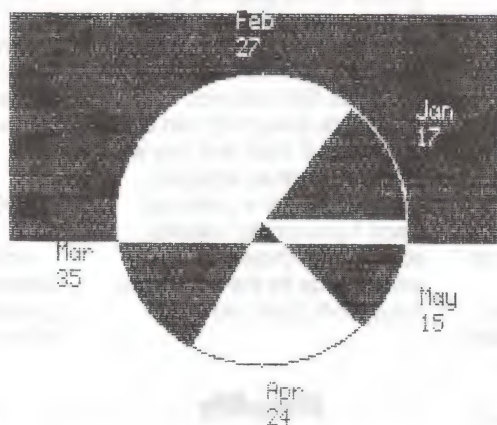
In the case of Quill you use the Files menu and then the Import option, which will place the file at the cursor position. When importing, the insert file will automatically shift down any existing text the appropriate number of lines to allow the graphics space within the printout.

There are then just two things to remember. Firstly, put your text

time on TnG to get the best out of it. The author, Alan Bridewell, has provided a whole range of aids and features to enable you to grasp it all as easily and quickly as possible.

Examples

The manual is comprehensive, instructive and logically presented, and leads



compatibility is a pre-requisite for the graphics routines to work)

Most of the control codes are merely sequences of 3, 4 or 5 characters initialised by Ctrl-Esc or Ctrl-Shift keypress combinations. They can with thought provide a powerful level of control over your printed output with effects that can be quite impressive.

Picture it

How about getting the graphics into the text? Remember the special insert file of our graphics screen dump we mentioned earlier as one of the options when processing your graphics display. This is the file that we have to input into our document. This depends on the wordprocessor you are running.

control codes back in at the end of the insert file space. This is because the graphics routines remove them all so they have to be re-set. Secondly, save your final version as an Ascii plain text file. If it's Quill you do this by printing to a .lis file.

That done, you exit Quill and load up TnG or switch back to it if you are multitasking. From the main menu choose the option to process a text file. This then gives you two further options. You can either choose to print out your text and graphics creation there and then or you can save the whole thing as a special file which can be used without having to go through TnG at a later time. All you then would have to do to print it is to use SuperBasic to Copy the file to your printer port, ser1 or par or whatever.

You do need to spend some

time on TnG to get the best out of it. The author, Alan Bridewell, has provided a whole range of aids and features to enable you to grasp it all as easily and quickly as possible.

Although quite complex in the variety of operations you have to perform, TnG is driven by simple menu selection and on-screen instruction and information.

You can opt for sound (progress beeps, mistake splurges, etc.) or no sound. I recommend sound-on as it gives you some indication of progress especially during a long save routine. The program adjusts itself for either 9 pin or

24 pin printers once you have given it your specifications. This ensures that you get an undistorted printout whichever you use. However there is a further utility which allows you to make additional modifications to your graphics files. This runs as a separate task to the main TnG program. Among other things it allows you to convert from 9 to 24 pin printing if you subsequently find that you need to do this.

It also gives options such as changing the print density (the number of passes the printhead makes) or changing the default centre justification of the graphics printout to left or right. This is particularly useful if you want text either side of the graphics. If you do want this you have to be clever with the control codes you choose in your .lis file as you have to judge the right number of reverse linefeeds and determine the new left and right margin settings.

A further benefit of TnG is that it will allow you to print out all those special and foreign characters that your existing printer driver won't pick up. Alan even gives an example of how you can print out true mathematical fractions by using special methods to control the printhead (superscript, backspace, normal, backspace, subscript etc.).

Not QPac2

The only real problem I had was when running it as a task within *Qpac 2* and this only concerned the option to 'grab' screens from other graphics programs multitasking with it. The result of a telephone conversation with Alan Bridewell was the conclusion that Qpac 2's Window Manager would not allow it.

All in all TnG is a very impressive package giving high quality printouts without making a major switch to a full blown DTP package. If you're a relatively inexperienced user you will need to spend some time becoming familiar with the various processes, as well as understanding the methods of operation. But I think you will get there, especially if you follow the manual. And if you do it is possible to get printouts which are quite stunning.

QMaths 2.10

QMaths is in its second incarnation. Hilary Snaden adds up its functions.

INFORMATION

Program: QMATHS Maths

System Part Two

Supplier: Digital Precision Ltd,

222 The Avenue, Chingford,
London E4 9SE.

Tel. 081 527 5493.

Price: QMATHS part 2 £59.95.

QMaths part 1 £69.95. Both
parts £99.95.

Qmaths is the collective title as well as the "star component" of one of Digital Precision's most important recent software releases. The Qmaths program itself is described as a "symbolic algebraic expression simplifier". More simplistically, it's a sort of calculator which works with algebra.

As an alternative to the supplied boot program, Qmaths may be multitasked from Basic using EXEC, as it is written in SuperBasic and compiled with

QLiberator. Unfortunately, while the QLiberator runtimes have been included, either they or the compiler used were not fully compatible with my Minerva rom as Qmaths could find neither Minerva screen when in two-screen mode.

In multitasking Qmaths from SuperBasic, the cursor kept switching itself back on after every operation from SuperBasic, but apart from that, and in Minerva's single-screen mode, it behaved well. Clear, on the main menu, redraws the whole screen as well as clearing the window.

The working

At the start, the QL screen is in three parts: a menu line at the top, a status line at the bottom, and the window displaying expressions entered, results produced and, as an option, the working.

The status line shows whether the printer is in use, what level of working has been selected, how long the last calculation took, and, when the program is working on an expression, what it is doing. R indicates data being read, . (full stop) an expression being scanned, T a transform in progress, and I that things are being shuffled to make more memory available.

User- and program-generated expressions are displayed in white, working in red. Each expression entered by the user or produced by the program is tagged with a sequential number so that previous expressions may be recalled, edited, and used again or as part of a further expression. The number of expressions kept available for recall depends on their size, but typically around four hundred can be entered before the earliest drop out.

The first menu option is Define. This brings up a sub-menu window (which restores the original screen when it disappears) into which one enters the expression to be worked on. To recall an earlier expression, type # plus its identification number.

Maths exams

As an illustration we will work

through a problem at around GCSE/A-level standard, viz.

"Show that
 $\sin(c) + \sin(d) = 2 \sin((c+d)/2) \cos((c-d)/2)$ "

An expression is entered on the "Define" menu something like:

$$2 \sin((c+d)/2) \cos((c-d)/2)$$

If graphics mode has been selected (which is how the program starts) this will be displayed in traditional algebraic notation. The working menu is selected by pressing W, and F (for full working-out) or T (to show transforms only) from the sub-menu which appears. It is also possible to select from sub-menus. If the printer option has also been selected, working will be sent to the printer as well.

The Printer menu offers a number of printer drivers. Special algebraic characters can be printed as dot graphics to Epson printers, as a custom character set for those capable of accepting a user-definable font, or as IBM graphics characters. Everything can also be printed in plain text; this will not be as neat as algebraic notation but it is a useful last resort if your printer will only accept Ascii characters. Basic source code for the drivers has thoughtfully been provided.

Simplify

The second menu option is "Simplify". This looks for parts of an expression which can be calculated or combined. Hence, if "Define" has been used to enter the expression

$$\text{dif}(\cot(x))$$

where dif means the differential (with respect to x: this can be changed from the "Options" menu) of the expression in brackets, invoking "Simplify" will produce

$$-\text{COSEC}(x)^2$$

From the "Options" menu one can also free pi, e and i to have their meanings redefined; alter the base of logarithms; set memory size to "large" or "small"; change the multiplication symbol used, and select graphics or text mode. A "large" memory configuration is only essential when matrices as large as 4x4 are being used, but

may be necessary if very large expressions are being manipulated.

Integration of expressions can also be attempted via "Simplify", but as anyone who has been involved with calculus will understand, there will be occasions when Qmaths will not be able to cope.

Solve

The Solve function is powerful; suppose we need to rearrange

$$x^2 + y^2 = (r^2/h^2)(h-z)^2$$

in terms of z. Using Define to enter

$$\text{solve}(x^2 + y^2 = (r^2/h^2)(h-z)^2, z)$$

followed by invoking Simplify produces the result

$$z = h - \text{SQRT}(((x^2 + y^2)h^2)/r^2)$$

Qmaths is, however, unable to solve quadratics or solve an expression for a variable which appears more than once, such as

$$M = E - e \sin(E)$$

which, as students of astronomy can confirm, cannot be solved for E except by an iterative method.

And the rest

Other functions available, besides trigonometric and hyperbolic trig, include logarithms, combinations, matrices, substitution and Taylor's expansion. In keeping with mathematical tradition, variables used by Qmaths, unlike those used by SuperBasic, are case-dependent.

To return to our original algebraic problem, the next step is to go to the Transform menu, which offers various ways of rearranging expressions. The obvious choice for this particular problem is "Trigonometric", since we are dealing with SIN and COS. Other options are "Algebraic", "Expand" and "Factor", each of which have sub-menus. From the Trigonometric sub-menu we choose "Sums & Multiples", and yet another sub-menu asks which direction the transform should take. For this particular

problem we would choose "Reverse".

Qmaths can now go to work. The time taken varies greatly depending on the size and complexity of the expression, the type of transform, and how much working is being shown. Using a printer, particularly in graphics mode, without a fairly generous buffer, will slow the program further. This transform took nine seconds with no working shown, and twenty-five with full working selected. Gold Card owners can expect dramatic reductions in these times.

We are now presented with

$$2(\sin((c+d)/2+(c-d)/2)/2+\sin((c+d)/2-(c-d)/2)/2)$$

an expression which means the same as the one we entered, but in a different arrangement. Expressions, especially expressions like this, look a great deal clearer when displayed in graphics format.

We now need another transform, this time going to the "Factor" sub-menu and selecting "Anything". Factorisation can be a slow process, and this one took eleven seconds with no working, 106 seconds with full working shown.

The result produced by Qmaths is

$$\sin(c)+\sin(d)$$

which, of course, is what we were trying to prove. QED.

Teacher!

The "working-out" is the program's, and not what a human brain is likely to produce, though it is a useful guide if interpreted carefully. Be aware that any maths teacher would spot the difference a mile off!

Expressions accumulated during a working session can be saved to disk for later use. There is no way of deleting unwanted expressions - mistakes, perhaps - and a useful addition would be a supplementary program which can edit and reformat the files, particularly for users who want to maintain a library of expressions.

The "Review" facility goes half-way there, stepping through previous expressions which can be reselected, or printed out either singly or in blocks. Strangely, there is no "Zap" command to clear out

accumulated expressions: to restart with a clean sheet one has to Exit and reload.

There is no facility to export expressions or workings to a file. It would be useful to be able to incorporate this data in documents, but at present the only way is a roundabout (and undocumented) method of rewriting a printer driver with a filename in place of "ser1".

Export limits

It may be expecting too much to export graphics characters, since to print them from a wordprocessor would need either a custom font with text87 driving a printer in graphics mode, or a custom font and custom printer driver with Perfection. However, exporting the data as plain Ascii would be useful and it is difficult to see why this is not an option.

It is easy to become puzzled with a program of this complexity, and as well as a clear and helpful manual, context-sensitive help is available by pressing F1. The manual seems to have fallen a little behind the program in its assessment of memory requirements: with a code size of 147K and a dataspace of 246K Qmaths is (in QL terms) a very large program.

The manual quite reasonably points out that Qmaths by itself is unlikely to teach you algebra. If you are starting from scratch on a mathematical adventure you should get a good introductory textbook.

Having said that, Qmaths also has "lessons" on disk. The subjects begin with Basic algebra, and go through trigonometry and complex numbers to special relativity.

When a lesson is called up, text messages and simple diagrams appear on-screen explaining what's going on, together with embedded sample problems which Qmaths then proceeds to solve. The pull-down menus come and go so quickly that it is often difficult to see exactly how the program is tackling each problem, but it is usually possible to make a sensible guess at what is going on.

Lessons

It is also possible to write your own lessons to save for future

use. The lesson facility is excellent, enhancing the educational potential of the program. The lessons supplied may be a little concentrated for the newcomer to this type of maths; perhaps a wider range will become available.

Qmaths is not idiot-proof; that would be expecting far too much of any program which tries to do what Qmaths does. It is certainly likely, if used wisely, to help grow a "feel" for algebra, and could prove a valuable learning tool up to GCSE and A-level standard as well as for those wishing to explore this branch of mathematics. It may also be useful to people with an interest in engineering and astrophysics, where calculus and algebraic expressions needing rearrangement are intimidatingly frequent.

Qmaths is unique among QL software. The author deserves great credit for the thought and programming time which has gone into it.

QFRACT 1.06

Fractal script is a language used to define fractals so that the necessary complex maths are kept at a safe distance from the programmer. Qfract is a fractal script interpreter, taking programs written in fractal script

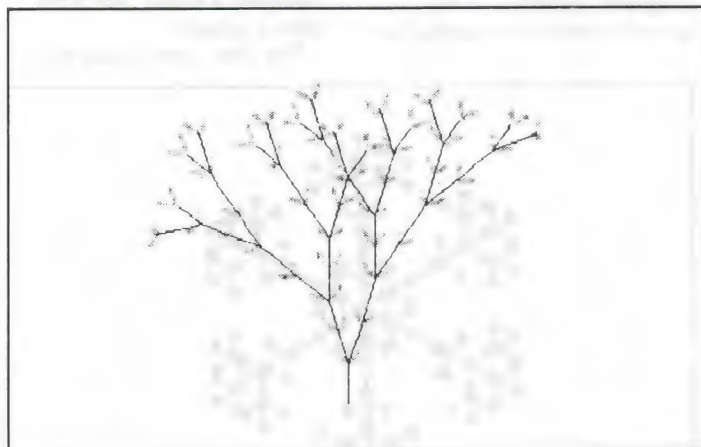
SuperBasic's priority to 1. This seems pointless as, since Qfract is run with EXEC.W, SuperBasic is suspended anyway. It be better if SuperBasic's priority was restored to its usual value of 32 on quitting Qfract.

One of the most striking features of Qfract is its custom character set, something one wishes for more often, since the QL's native font is not crystal clear. Menus appear at the bottom of the screen, leaving a large area for use by the program editor, and the whole screen is used for displaying the fractal images. The main menu gives these options:

ESCAPE exits the program
F1 clears the contents of the program editor
F2 accesses the files menu
F3 enters the program editor
F4 redraws the image
F5 runs the program currently in the program editor.

The files menu allows one to save, load or delete program files, change the data device, and view a file without loading it. Program filenames end in _QFS, and only these are shown when a list of files is called up.

Unfortunately, when the Files - Load option is invoked there is a long wait while the program reads the disk and sorts out a directory, as a list which slowly



to turn into graphic images

Qfract is Turbo-compiled SuperBasic, requiring a short Basic extension of its own as well as the Turbo runtimes (all of which are supplied on the Qmaths disk) and at least 384K ram in which to run. The version of Qfract supplied for review would not run in Minerva's two-screen mode.

For some reason Qfract alters

scrolls under a static cursor; it looks neat but takes ages to select a file at the bottom of the list. QL users without a Gold Card may find the files menu a more taxing test of their patience than waiting for the fractal programs to run.

One cannot set different devices for reading programs from and saving screens; to use, say, flp1 for programs and flp2.

for screens one has constantly to alter the device via the device select option. One wonders if the files menu expects every user to have a Gold Card and hard disk or ED drives.

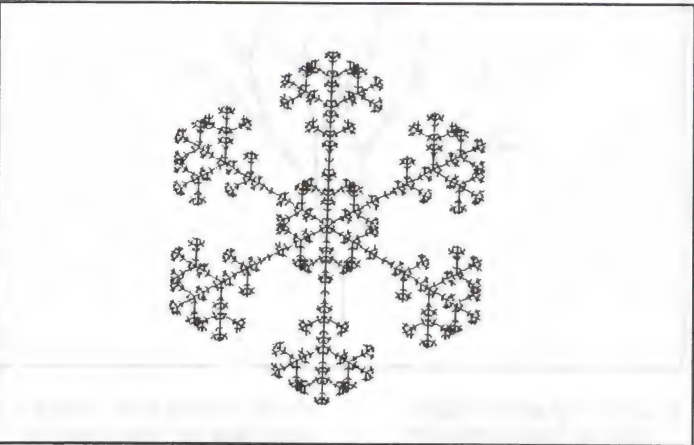
Delight

On the other hand, the program editor, an integral part of Qfract, and custom-designed for editing fractal script programs, is a delight. It is no more complex than is needed to edit the (usually) very short programs. Should users wish to prepare programs in their own, separate text editor this may



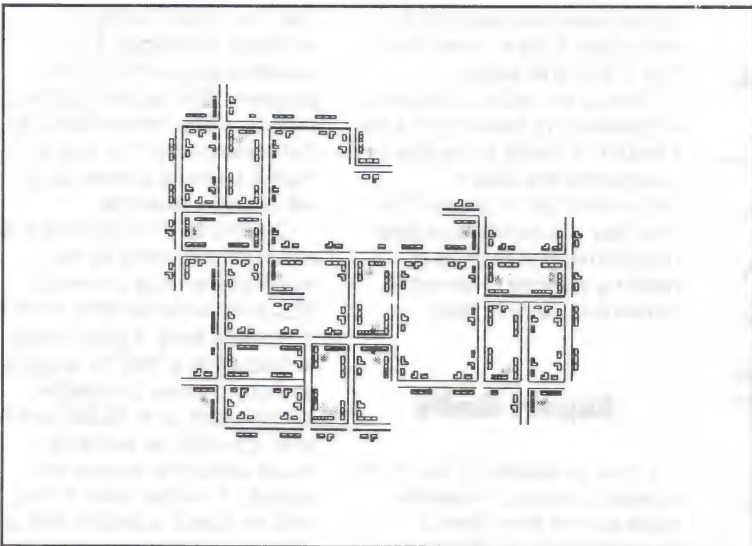
also be possible. Qfract accepts standard notation for the script, so programs additional to the generous selection supplied on

supplied programs. It is fascinating to see how much difference can be made by changing a single part of the original program. The "Run" option uses the



the disk can be typed in from other sources with the minimum of modification. It is almost as easy to write one's own, following the copious information on fractal script (including a learn-as-you-go tutorial) in the manual, and easier still to modify the

program in the editor to generate a "result string", the characters in which refer, essentially, to turtle graphics commands. This can take some time. A status window gives some idea of how far it has got. Attempts to run the supplied example programs occasionally



failed with a "multiple decimal points" error message which, on examination of the program code, seemed inexplicable. This was probably the most serious problem I had with any of the Qmaths programs.

Redraw

The length of result string is effectively limited only by the ram available, and the time you are prepared to wait. The result string is then converted into graphics commands which Qdos can understand and use to draw a picture. The "Redraw" option repeats this process, though as this can be tedious it is difficult to see why the current picture is not also stored as a complete screen image, which would allow the option of an instantaneous redraw.

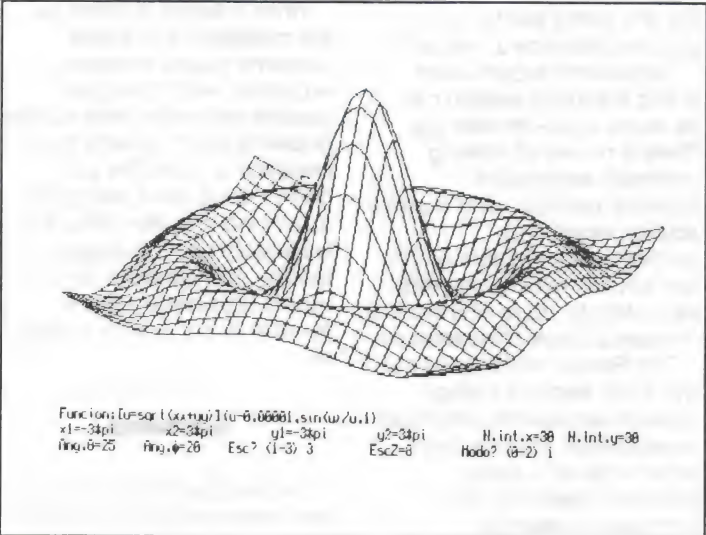
A further puzzle, especially as one cannot be sure what a picture will be like until Qfract has finished drawing it, is that while it is possible to dump the screen to a printer, or to save the screen image as a disk file,

these can only be done from within a script program. This is irritating if one has waited half an hour for a program to run, and forgotten to include the ScreenSave command. It would also be helpful, when the AutoScale facility is used within a fractal program, to be able to find out the scale value that Qfract chooses so that an appropriate scale can be written into later versions of the script program. The manual deserves special praise as a clear and informative introduction to fractal script as well as a lucid explanation of the

program. QL users are likely to find fractal script addictive; the ability to produce lifelike images of trees and snowflakes from a few short lines of code deserves interest. Despite some irritating features, the quality of the graphics is limited only by the QL's current hardware, and the Qfract is an enterprising attempt to make a fascinating aspect of fractal mathematics accessible.

SURFACE MODELLER 3.0

Surface Modeller is essentially a program for drawing sophisticated 3D graphs. The program has a primitive but functional user interface - there are no menus as such at all - and the manual is necessary to master the program. The manual relates that the author wrote his own drawing code when he found QDOS's inbuilt line-drawing routines too



inaccurate. It has certainly worked, as and the program is capable of producing quite superb graphics.

There is no screen dump facility, but pressing P prompts for a filename under which the screen can be saved to disk, with or without a data caption, for subsequent printing by a utility such as Sidewinder. Pressing R redraws the screen in a wire-frame format.

The data which needs to be entered is the function $f(x,y)$ which is to be drawn, the ranges of x and y , the number of intervals in the x and y axes used to draw the graph, the angle of view, the scaling mode (none, automatic or manual), the scale if manual scaling has been selected, and presentation mode.

graphics quality, even on a humble Trump-carded QL without the Lightning graphics extensions and in one of the slower presentation modes.

This is another program which will not run in Minerva's two-screen mode. In addition, the custom extensions, called QLVAL.EXTS on the disk, trash any default device definitions set up (via DATA_USE etc.) by Toolkit 2. However, as long as Toolkit 2 has been installed (with the command

TK2_EXT on rom-based versions) the part of the boot program which says

CALL _addr+1444

can be removed. This does not affect the program but ensures that default devices are left intact. This is the sort of information which should be somewhere in the manual or the

such as divide by zero, and asks for a retry. Occasionally an error message appears, for reasons not always obvious, but usually traceable by close scrutiny of the input data.

Some users may prefer a neater (or more ostentatious) user interface, but what counts most - the graphics output - is outstanding.

HIGH PRECISION CALCULATORS 2.01

The most purely arithmetical program on the Qmaths disk is the high-precision calculator set, six in all, giving an accuracy of 14, 33, 72, 149, 303 and 611 figures, but otherwise identical.

The programs need input in Reverse Polish Notation; this means in essence no more than entering operators and operands in a different order, and one quickly becomes accustomed to it. (*Even I - Editor.*)

calculation to a more reasonable 14 figures is almost instantaneous.

Enough functions are available to cope with most calculations, and the results are stored on a stack, available for recall. The programs multitask from SuperBasic easily using EXEC, and typing ? or HELP at the prompt brings up one of several inbuilt pages of handy hints.

All the calculators can read instructions from and save results to a file, so one can set up long-winded series of calculations and leave the program to get on with them.

Anyone with a need for maths to a higher accuracy than the QL's rom maths routines support could do little better than get a set of these programs.

As one might expect from Laurence Reeves, author of the Minerva rom, the calculators are fully compatible with Minerva.

Compendium

As well as the foregoing, the Qmaths disk contains several short Basic examples of how to deal with polynomials, statistics, matrices and various other problems. The manual invites users to use these in their own programs. As a final comment, the Minerva rom has been around long enough that one wonders why new software is not fully compatible with

it. Since this should involve little more than recompiling, Minerva users might reasonably expect updated, Minerva-friendly versions of the Qmaths programs to appear.

This is the kind of enterprising and imaginative software we could do with more of, and despite any reservations I have expressed about the presentation of the programs all of them do what they claim to, and do it well.

pi according to High Precision Calculator
(611-figure version)

```
3.1415926535897932384626433832795028841971693993751058209749
445923078164062862089986280348253421170679821480865132823066
470938446095505822317253594081284811174502841027019385211055
596446229489549303819644288109756659334461284756482337867831
652712019091456485669234603486104543266482133936072602491412
737245870066063155881748815209209628292540917153643678925903
600113305305488204665213841469519415116094330572703657595919
530921861173819326117931051185480744623799627495673518857527
248912279381830119491298336733624406566430860213949463952247
371907021798609437027705392171762931767523846748184676694051
320005681272
```

The manual says little about presentation mode beyond suggesting experimentation; there are nine modes (plus an undocumented mode 9 which appears only to clear the drawing screen) some of which seem to be fast draft modes while others are slower but more accurate. Coloured or wire-frame presentations are also available. Speed is as impressive as

Speed is as impressive as graphics quality, even on a humble Trump-carded QL without the Lightning graphics extensions and in one of the slower presentation modes.

boot program but is not.

Surface Modeller has specialised applications, but it is also fun to experiment with; it usually recognises data input likely to produce a fatal error,

For example

1 acos <Enter>

calculates the value of pi.

Logically, the higher-precision calculators take longer; with a Minerva rom and Trump Card the above calculation takes seven minutes to 611 figures. Only the most specialised applications will need such accuracy, and the same

QD version 5

QD, the pointer-driven text editor from Jochen Merz, has now reached version 5. Wolfgang Lernerz investigates what is new.

INFORMATION

Program: QD5

Supplier: Jochen Merz, Im Stillen Winkel 12, D Duisburg 11, Germany

Price: DM 125

Before delving into QD, I should probably state that Jochen Merz, author of QD, is also distributor of a program I have written (FiFi, reviewed in the February issue of QL World). I have no other connection with Jochen Merz.

QD was, and is, the only text editor conceived to work under the pointer environment and take advantage of the its possibilities, so it can be used with a mouse, has movable/sizable windows, uses the (to my mind) easy-to-understand pointer interface menu system, is colour-configurable, and so on. As it has now reached version 5, a short review is in order. Indeed, if I follow the program author's version numbering system correctly, each new version corresponds to a major overhaul of the program, generally implying the addition of various new facilities. In this review I shall concentrate on the new(er) possibilities.

One major feature of QD is the ability to call upon a "Thing" directly from within QD. (Things are machine code routines which may be included in the QL A list of Things is then maintained by Qdos, and Things can be used from within application programs - even Basic). The possibilities for using Things has existed since version 2 of QD, but it has now been extended to such an extent, that it is entirely possible for the Thing to take over QD completely. For example, the Thing can obtain lines from the file QD is currently editing, change them, and give them back to QD.

Things

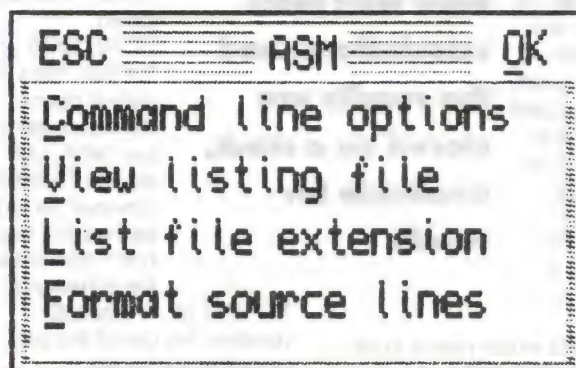
The Thing to be used by QD must have a special format (the details of that format can be obtained free of charge from Jochen Merz). Once such a Thing exists it can be used from within QD, by hitting F10 (Shift-F5). The action it performs depends on the Thing itself. One such Thing is the QDasm Thing, an extension for users writing assembler code. This is on the QD disk, but users are not obliged to use it if they do not wish to.

This Qdasm Thing greatly eases the assembler

programmer's burden: it is possible, for example, to format code automatically. Here, we see the incredible integration that is possible between the Thing and QD: when one uses the QDasm Thing in QD, QDasm opens a new menu within QD, one of the menu

routine is located in a large file? All it takes now is Ctrl-W on the label, call up the search menu, type 'T' (for 'Take word') and the search can start.

It must be said, however, that for this type of operation, QD has a faster way: the GOTO menu where, indeed, it now is possible



options being to format lines of codes (see **figure one**). Having selected this option, whenever one enters a line of assembler instructions, the line is reformatted according to the parameters set by the user. One can also call the QMAC macro-assembler (now sold by Quanta), or indeed other assemblers, directly with this Thing. This will save the file, call the assembler, have the file assembled and come back to QD with eventual errors - all in one go!

As can be seen from the above, QD is very much a programmer's text editor. To my mind, that makes sense, as I have never really been able to use text editors to write letters or other documents. Here the facilities offered are conceived with the programmer in mind (for example, there is no automatic line wrap, which is useless for writing programs anyway).

Search

The search and replace options have been quite extended compared to earlier versions: one can now determine up to four search/replace strings (but one can only use them alternatively, not concurrently). A nice feature is that hitting Ctrl-W when the cursor is over a word makes that into a QD "word" (actually a block), and one can then quickly set this to be the search/replace parameter. This is not to be under-estimated: how often does it happen that one wishes to see, for example, where a label is used, or an EQU substitution, or where a sub-

to go directly to an assembler label (see **figure two**): if one chooses 'assembler label' in this menu, QD displays a list of all the assembler labels in a window, and selecting one will position the cursor at that label. One gripe here: I would prefer the labels displayed to be ordered alphabetically, instead of having them displayed in the order in which they are in the file. I remain unconvinced by the author's argument that one generally knows whereabouts in a file the label will be (more towards the end, or at the beginning, and so on) and that, thus, one finds it faster in the list. Still, this feature is one of my favourites.

It is also possible, in the same fashion, to go to Basic functions and Basic procedures, if one edits a Superbasic program: selecting any of these options results in the list of procedures or functions being displayed, choosing one function then places the cursor at the line where that procedure/function is defined. So the Basic programmer has not been forgotten - and this is even more true with the all new "hypertext" help function.

Hypertext help

Imagine: you are writing a Basic program in QD. There is a keyword you need, the syntax of which you can't recall (just where does the colour parameter go in the 'BLOCK' command?). Wouldn't it be nice to put the cursor over the word 'block', hit F1 (the normal help key) and have a page of text

come up, telling you all about this keyword? And so it does (see **figure three**). QD now has an extensive and expandable help system, which can give help about anything, provided the help files and an index file for it exist and are in a certain

help window with that routine!

Some other new aspects of QD 5 concern the menu extensions. The menu extensions are, of course, a separate piece of software, even though QD will not function without them. Their purpose is to supply a certain set of standard

so I shall only talk about them here insofar as they are visible to the QD user and sport new facilities. For example, whenever one has to select a file (to load or insert), another window is opened where one can comfortably choose the file to be loaded. This "file selector" is actually one of the menu extensions. A new - and very welcome - option in the file selector box is the possibility to "view" files before loading. If one chooses ("hits" in pointer-environment-speak) a file when the "view" option is selected, then one can see this file before loading. If one confirms that this is the file to be loaded (a "do" on the file) then the file is loaded. This is very straightforward and easy.

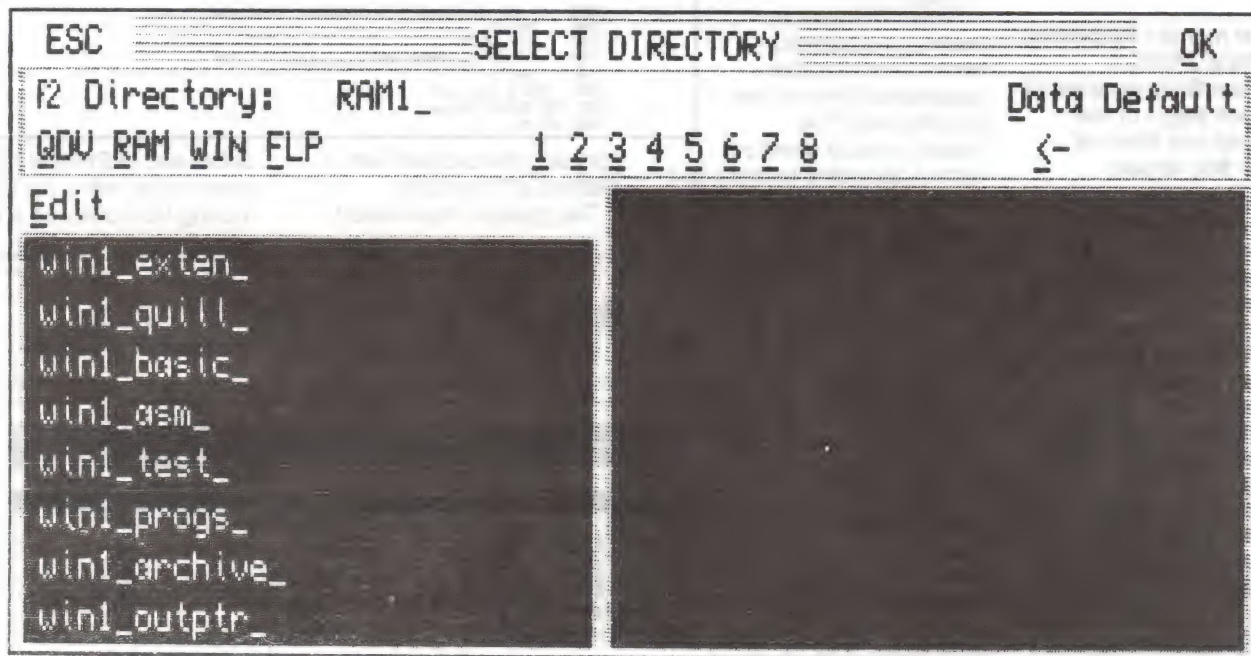
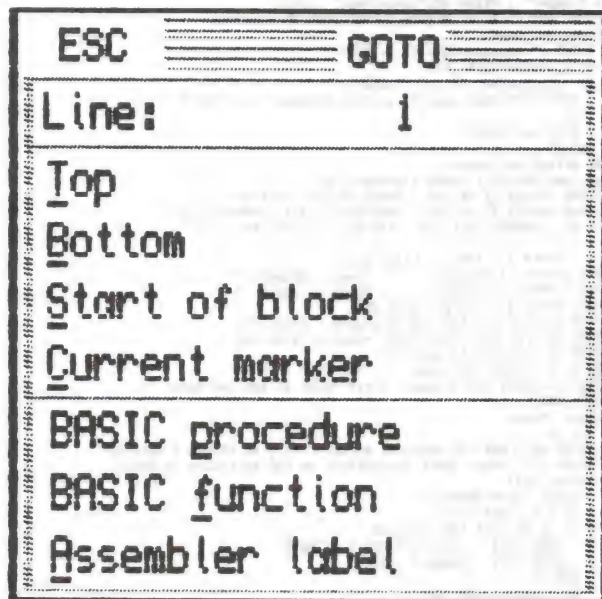
Directories

Another new option can be found in the "directory selector", from which one can choose a directory for file operations. This directory selector allows a quick choice of directories, and proposes a certain number of predefined sub-directories. Of course, the user can configure these pre-defined directories before loading the menu

this, and it will then save the newly configured menu extensions into a file of your choice.

The menu extensions also contain another set of extensions, the 'scrap' extensions. The idea of the scrap extensions is that, like the Macintosh scrapbook, it should be possible to put data onto the scrap from within one application, and then put it back into another application. Of course, QD now supports this and it is possible to put all or part of the file onto the scrap and/or get it from the scrap. This is actually the fastest way to get some part of a file from one QD to another: put it on the scrap from within one QD, and then get it from the scrap into the other QD. This is just like a 'cut and paste' operation on other (lesser!) computers. It is to be noted that other software (such as Qspread) is starting to use the scrap, so that it is becoming possible to cut and paste between different applications!

I have only described the major changes to QD. I have not described things like the fact that it now can have shorter button names. You will probably have guessed from the general



format. The help files for the Basic keywords are of course supplied with QD, so you don't have to type them in yourself. For assembler programmers, a Basic program is supplied that can make a help index file of all XDEFs in assembler files - that way, doing "help" on a label of an external routine will call up a

(file) functions to all programs "aware" of these extensions. Technically speaking, the menu extensions are a "Thing" (but not a QD Thing) and are loaded in the boot via a RESPR and CALL combination.

The menu extensions were extensively reviewed in the August 1992 issue of *QL World*,

extensions. Up now it was not possible, however, to re-configure the pre-defined directories once the menu extensions were loaded. A new "edit" option does now allow

tone of this article that I am enthusiastic about. As I tend to do a lot of programming, I make extensive use of QD, and it is a program I can recommend wholeheartedly.

SuperBasic in Action

**Simon Goodwin's
PAGE PRINT gets
user-friendly.**

Last month I introduced **PAGE_PRINT**, a SuperBasic program to pack pages of text onto one sheet of paper. The first version produced impressive results, but had a very simple user **INPUT** routine, which is fine if you know what you're doing but not to everyone's taste.

This month's listing extends **PAGE_PRINT** with a friendly menu which shows the size and format of each potential layout, accepts any page length, and prints helpful messages as it goes along.

The program illustrates ways to implement a menu bar, validate entries and generate italic headings in SuperBasic. It uses windows #0 and #1 and a compiled version will happily multi-task without assistance on any QL, thanks to the useful but undocumented **PAN** #0,0,115 instruction at line 2290, which turns on a cursor before **INKEY\$** calls.

I, J and K are only used to

hold whole numbers, typically array subscripts in **FOR** loops, so they are best defined as integers if you wish to compile the program with Qliberator or Turbo. The resultant code will be faster and shorter as a consequence.

Splicing

The accompanying listing will not run on its own, but only in conjunction with last month's Basic. The new lines fit before the others, linked by the revised **PROCEDURE** **USER_INTERFACE**, which now calls **CHOICE%** rather than present a series of **INPUT** questions. Change the lines to match the second listing if you want to run both parts together. The old **INPUT** lines are still there, but have been 'commented out' with **REMark** keywords. An added **IF** on line 2930 prevents the Epson initialisation string appearing in condensed or plain Ascii output, as this may confuse some vintage printers.

CHOICE% starts by drawing a shadowed window with a border suggesting light from the top left corner. The heading should stand out without appearing to shout, so I use a sequence of **WINDOW** and **PAN** commands at line 1230 to slant the text evenly to the left, creating a new print style without changing the font.

The hard-working default window is then moved down the screen, where a second shadowed box will contain the main menu. Note how channel #1 can be moved around to get the appearance of several windows, without wasting memory by opening them all at once or

QL World SuperBasic in Action, **PAGE_PRINT** part 2, May 1993

```
1000 REMark PAGE_PRINT 1.5 by Simon N Goodwin, 6th May 1993
1010 REMark MERGE with the program on pages 32-34, April 1993
1020 :
1160 DEFine FuNction CHOICES%
1170 min_height%:=10 : max_height%:=4000
1180 MODE 4 : WINDOW 452,52,36,18 : PAPER 2,0 : CLS
1190 WINDOW 452,52,30,15 : BORDER 1,4,2 : PAPER 0 : CLS
1200 CSIZE 0,0 : AT 1,11 : CSIZE 2,1 : INK 7
1210 PRINT "Qdos PAGE PRINTING Utility"
1220 REMark Make italic banner
1230 FOR i=1 TO 9 : WINDOW 350,2,80,25+i*2 : PAN 10-i
1240 WINDOW 448,50,32,16 : CSIZE 1,0 : AT 3,4
1250 PRINT "For QL World, Version 1.5 © 1993 Simon N Goodwin"
1260 REMark Add shadow to main window
1270 WINDOW 452,132,36,78 : PAPER 2,0 : CLS
1280 WINDOW 452,132,30,75 : BORDER 1,4,2 : PAPER 0 : CLS
1290 INPUT "Input file (e.g. FLPI.BOOT) : ";file$
1300 IF file$="" : PRINT #0;"Cancelled." : STOP
1310 REMark Add FTEST or DEVICE_STATUS here if required
1320 REPEAT get_width
1330 PRINT "Column width (e.g. 40) : ";
1340 cols_used%:=POSINT(#1)
1350 IF cols_used%<1 OR cols_used%>127
1360 PRINT "Please specify a width between 1 and 127."
1370 ELSE
1380 EXIT get_width
1390 END IF
1400 END REPEAT get_width
1410 col_spacing%:=cols_used% + column_gap%
1420 WINDOW #0;452,32,36,218 : PAPER #0,2,0 : CLS #0
1430 WINDOW #0;452,32,30,215 : BORDER #0,1,4,2 : PAPER #0,0
1440 CLS #0 : BORDER #0,4,128 : INK #0,7 : CSIZE #0,1,0
1450 :
1460 CLS : PAPER 2 : INK 7 : CSIZE 2,0
1470 AT 1,3:PRINT "Printer Lines Columns "
1480 AT 2,3:PRINT "standard /page /page "
1490 i=1 : PAPER 4 : INK 0 : SHOW_VERS
1500 PAPER 0 : INK 7 : FOR i=2 TO pages% : SHOW_VERS
1510 PRINT #0;"For best PAGE PRINT results, pick the ";
1520 PRINT #0;"version to suit ";
1530 INK #0,4 : PRINT #0;"your " : INK #0,7
1540 PRINT #0;"eyes and printer. Press ENTER to use the menu. ";
1550 SURE_PAUSE : i=i
1560 REPEAT choose
1570 CLS #0
1580 PRINT #0;" Use the vertical arrows ( ↑ ↓ ) to choose a version."
1590 PRINT #0;" Press SPACE to confirm, or ESC to return to BASIC. "
1600 REPEAT poll
1610 PAUSE : k=KEYROW(1)
1620 IF k=0 : NEXT poll
1630 IF (k && 128) AND i<pages%
1640 SHOW_VERS : i=i+1 : PAPER 4 : INK 0
1650 SHOW_VERS : PAPER 0 : INK 7
1660 END IF
1670 IF (k && 4) AND i>1
1680 SHOW_VERS : i=i-1 : PAPER 4 : INK 0
1690 SHOW_VERS : PAPER 0 : INK 7
1700 END IF
1710 IF k && 64
1720 CLS #0
1730 PRINT #0;"PAGE PRINT version " & i;
1740 PRINT #0;" selected - are you sure?";
1750 IF YEA_OR_NAY : EXIT choose : ELSE NEXT choose
1760 END IF
1770 IF k && 8
1780 CLS #0 : PRINT #0;" Cancelled." : STOP
1790 END IF
1800 END REPEAT poll
1810 END REPEAT choose
1820 CLS #0
```

confusing the program with a plethora of # symbols.

The greatest improvement

before each **KEYROW** call prevents the menu bar from moving too quickly on a Gold

Qdos PAGE PRINTING Utility

For QL World, Version 1.2 © 1993 Simon N Goodwin

Printer standard	Lines /page	Columns /page
HP 1	130	2
HP 2	130	4
New Epson 1	65	3
New Epson 2	130	3
Old Epson	130	3
Condensed	65	3
Plain ASCII	65	1

For best PAGE PRINT results, pick the version to suit your eyes and printer. Press ENTER to use the menu.

over the **INPUT** version is the menu which shows the seven print styles, indicating the number of columns available in your chosen width as well as the printer details. The **PAUSE**

Card or other accelerated system.

The filename is not checked, but Toolkit users could add a call to **FSTAT** or **DEVICE_STATUS**, with


```

1830 PRINT #0;"The default paper size is A4, with ";
1840 PRINT #0;page_length;" lines per page."
1850 IF !>=0 THEN
1860 PRINT #0;"Do you want to change this?";
1870 IF YEA_OR_MAY
1880 REPEAT get_length
1890 CLS #0 : PRINT #0;"Enter page length, in standard ";
1900 PRINT #0;"3.1mm or 1/6" lines ?";
1910 page_length=POSINT(#0)
1920 IF page_length<min_height% OR page_length>max_height%
1930 PRINT #0;"Sorry, this software expects ";
1940 PRINT #0;"min_height% to ";max_height%;" lines/page.";
1950 PRINT #0;"Press ENTER to try again or ESC to quit. ";
1960 SURE_PAUSE
1970 ELSE
1980 EXIT get_length
1990 END IF
2000 END REPEAT get_length
2010 END IF
2020 REMARK Work out gap between pages
2030 blanks% = ( 1 + (1=4 OR 1=5) )
2040 temp%=(height%(1)+blanks%)/70 * page_length% - blanks%
2050 height%(1)=temp%
2060 ELSE
2070 blanks%=0:REMARK No explicit blank lines in HP mode
2080 END IF
2090 RETURN 1
2100 END Define CHOICES%
2110 :
2120 Define PROCEDURE SHOW_VERS
2130 AT +3.3 : PRINT "as(1)";
2140 PRINT TO 20;height% : " 29:
2150 PRINT (width%(1)+column_gap%)/DIV col_spacing% TO 35
2160 END Define SHOW_VERS
2170 :
2180 Define FUNCTION YEA_OR_MAY
2190 LOCAL ks(2)
2200 PRINT #0;" (Y/N) ";
2210 REPEAT loop
2220 ks=INKEY$(#0,-1)
2230 IF ks="y" OR ks="n" : EXIT loop
2240 END REPEAT loop
2250 PRINT #0;ks : RETURN ks<>"n"
2260 END Define YEA_OR_MAY
2270 :
2280 Define PROCEDURE SURE_PAUSE
2290 PAUSE #0.115 :REMARK Turn cursor on
2300 PAUSE 5 : PAUSE 5 : PAUSE 5 :REMARK Lose key bounce
2310 IF INKEY$(#0,-1)=esc% : PRINT #0;"Escape pressed." : STOP
2320 END Define SURE_PAUSE
2330 :
2340 Define FUNCTION POSINT(channel%)
2350 LOCAL ks(6)
2360 INPUT #channel%;ks
2370 IF " " INSTR ks OR ks="" THEN ks="0"
2380 IF ks<0 OR ks>32767 THEN ks=""
2390 RETURN "0" & ks
2400 END Define POSINT
2410 :
2420 Define PROCEDURE USER_INTERFACE
2430 LOCAL tx
2440 form% = CHOICES%
2450 REMARK INPUT *File name : *.files
2460 REMARK INPUT *Column width : *.cols_used%
2470 REMARK INPUT *Format (1..7) : *.form%
2480 REMARK blanks% = ( 1 + (form%<4 OR form%>5) )
2490 REMARK col_spacing% = cols_used% + column_gap%
2500 IF form%<=0 THEN
2510 pr_init% = hp_init%
2520 ELSE
2530 IF form%<6 THEN pr_init% = epon_init%
2540 END IF
2550 page_size% = page_spec%(form%)
2560 tx=width%(form%) : REMARK "JM" badge
2570 DIM grids(height%(form%),tx)
2580 BLANK_PAGE
2590 END Define USER_INTERFACE

```

parameter 1 for input, to check that the named file exists before continuing.

The number of lines per page is adjustable from 10 to 4000, which would gobble almost 800K per 'page' in the GRID\$ array. The prompts refer to 'standard' line pitch of 3.1mm or one-sixth of an inch per line, but you can just type the number of lines available in your default font and paper size. Unless you are using HP codes remember to allow for the five full-height blank lines at the bottom of each fan-fold page.

New Old Bug

PAGE_PRINT will run on any QL or emulator - it has been tested on JM, JS and Minerva Qdos, and uses only inbuilt features of Sinclair SuperBasic. In the course of testing PAGE_PRINT I discovered yet another bug in early Sinclair roms - you can see the work-around at line 2960 in the USER_INTERFACE procedure.

If you use an array value in the expression setting the length of a string array element, in DIM, the JM QL ignores the true

number of elements and limits the first subscript to zero. Thus this program gives an 'out of range' error when it tries to print text\$(1):

```

1 DIM limit(0) : limit(0)=802
DIM text$(9,limit(0))/3 FOR i=0 TO 9 : PRINT i;text$(i)

```

The cure used in PROCEDURE USER_INTERFACE is to store the limit in a temporary variable and use that in the DIM, like so:

```
2 t%=limit(0) : DIM text$(9,t%)
```

This is not a serious bug once you know how to get around it, but it's rather confusing when first encountered. It also affects multi-dimensional arrays if any dimension after the first in the DIM is specified by an array.

More WorkPAGE_PRINT would be even nicer if it let you select a file name, or perhaps a set of names, from a menu. This brings SuperBasic In Action to the topic of the 'file requester', which will have to wait for another column. Till then, enjoy PAGE_PRINT and please write to me if you think of any other challenges for this practical SuperBasic column.

JOCHEN MERZ SOFTWARE

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New Games: The Oracle (by Jochen Merz) The Oracle is an ancient tactic-puzzle, where you do not have to be fast but clever! You have to fill different tiles into a field, but there are various rules how to do it. If you can place all the tiles you a bonus - if you obey special rules you get much more points. Every game is different, you'll never be bored. Features: high-score table, hints for the next move etc. **DM 49,90**

MineField (by Bernhard Scheffold) Another game for the Pointer Environment. You need skill and concentration to clear a minefield. Many options, configurable size, number of mines etc. Toolkit II required. **DM 39,90**

QD Version 5 - The first (and only) Editor using the PE. Dynamic memory allocation, no limit on numbers of lines, comfortable block-handling and many, many new features, e.g. improved print menu, better search/replace, GOTO Procedure and Function, even Machine code label.

New features: V5 Thing Interface which makes QD5 extendable and inbuilt **HyperText HELP System!** This HELP System is very easy to use, simply move the cursor over a word and press HELP (F1) and you get extensive help on the subject. With complete HELP (German and English) for SuperBASIC, inclusive examples! It is very easy to make Assembler-Help, e.g. get external definition of routines, libraries etc. with one keystrokes. HELP can be called recursively, which means, you can get help on previous help on another help subject. You can even edit the help texts, add remarks, examples etc. **DM 125,-**

Upgrade from QD V4 DM 30,-

All our products which contain SuperBASIC extensions will be updated so that they will have files which you add to your HELP System so that help is provided for additional Procedures/Functions!

HyperHELP BASIC

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Transfer Utility Special Edition

**Bryan Davies tries
the latest file-
transfer update.**

INFORMATION

Program: Transfer Utility
Special Edition

Price: £29.95

Supplier: Digital Precision,
222 The Avenue, Chingford,
London E4 9SE.
Tel. (081)-527-5493

The basic version of Transfer Utility was reviewed a little over two years ago, and is still available at the original price of £9.95. In its SE form, it is still a program without any

superfluous screen dressing, but it has some useful (and interesting) new features.

The program is supplied on disk only. The instructions suggest you use the program itself to make a back-up copy of the disk. Being EXEC-able, it can be run alongside other programs. No restriction is placed on memory size, indicating that the program can be used on a basic QL. It works with any of the standard QL devices, so you can copy your old microdrive cartridges onto floppy disk, for instance. This is a good example of what the program might be bought for - transferring files from cartridge to disk and, at the same time, changing any drive references within the files from mdv to flp. The options available make the program useful as an organisational tool; you can re-arrange files on media and modify file names.

Upmarket COPY

Written instructions are, by Digital Precision's standards, very brief, running to just six and a half sides. They are quite sufficient. You can regard the program as an enhanced form of the COPY command, and reams of description are not required for it. While COPY has served us all moderately well over the years, the introduction of WCOPY gave us a much more useful version of the command. There have been a variety of other copy commands from other suppliers, but it is likely that WCOPY will be the only one known to most users. However, that command has some oddities. Transfer Utility does a better job than WCOPY, although it is not a direct replacement for it in everyday use, in so far as WCOPY is a resident procedure whereas Transfer is an EXEC-able program. If you care to

```

1993 Apr 30 14:41:45                                caps off / memory # 1517856
SPECIFY DEVICE TO COPY FROM: FLP1_
SPECIFY DEVICE TO COPY TO: RAM1_
Ensure that the source medium is in FLP1_
SHOULD RAM1_ BE FORMATTED? (Y/N, default N)

SPECIFY TRANSLATE FROM : mdv
SPECIFY TRANSLATE TO   : flp

SPECIFY TRANSLATE FROM : 3945725
SPECIFY TRANSLATE TO   : 8218135

SPECIFY TRANSLATE FROM : ferrons
SPECIFY TRANSLATE TO   : ferroni

SPECIFY TRANSLATE FROM :
SHOULD THE MATCHES BE EXACT(aBc=aBc)/SEMI-EXACT(aBc=ABc)/INEXACT(aBc=Abc)?
(E/S/D)
    
```

experiment with the copy commands you have available, you may be surprised at the results; depending upon how unusual the file names are, you may find the number of files copied differs quite considerably from command to command. Transfer Utility is likely to "find" the most files. There is no intention of offering the program as a program duplicator; it will not duplicate the copy-protection "keys" used with some programs.

The SuperBasic extensions files required by Transfer are loaded via a boot file, and they are familiar ones - XTRAS, XTRAS2 and XTRAS3. These file names appear in other DP programs, and it is quite likely that your existing system boot loads the extensions Transfer requires, making this additional boot unnecessary. XTRAS is the standard set of Turbo run-time extensions, as used with The Editor etc., XTRAS3 is part of TK2 (Toolkit II), and XTRAS2 is a device for checking if TK2 is already present in the system and switching it on if it is. Thus, if you already use XTRAS, as is likely, and you have an interface such as the Trump or Gold Card and routinely use the command TK2_EXT (if it has to be used explicitly) in your boot(s), there is no need to load the extensions files supplied with Transfer.

What's it for?

The functions provided by Transfer Utility SE are straight device-to-device file or disk copy; string-translation; file name case changing; file sorting

The standard copy procedure includes the FORMAT command, in case your

destination medium is unformatted, or simply needs emptying of files. Device names can be of up to 32 characters each, which should be sufficient for most hard disk users. The first illustration shows the screen after the first few steps have been taken; the devices to be used have been named, the offer to format the destination device has been turned down, three translate pairs have been specified, and the decision on the form of string matching to be used is about to be taken.

You are automatically asked, every time you make copies, if any character string needs to be translated to something else. If you specify one translation requirement, you are then asked if you want others, until you indicate that is all by pressing Enter. At this stage, there is no mention of case-dependence, but this question comes next. You are asked to specify whether you want the string matching to be Exact, Semi-Exact, or Inexact. Exact is fairly obvious - Transfer will ignore MDV or MdV if you specify mdv as the "Translate from" string. Semi-Exact is more subtle and is best explained by example. Specifying mdV as the "from" string, and Semi-Exact as the mode, causes mdV, MDV, mdv and Mdv to be found. That is, the specified string, and the string all in capitals or all in lower-case or with only the first character in upper case, is found. This is the recommended operating mode. Inexact is what you would expect - all combinations of upper- and lower case will be found. This mode needs to be treated with caution, as you can get unexpected (possibly undesirable) results from it.

The string search is not "word-

specific" - the specified string will be found both on its own (a "word") or when contained within a larger group of characters. This means that "mdv" will be found in both "mdv\$" and "mdv1". As you would normally not want to do a global string replacement in such circumstances, it pays to do a bit of thinking before typing-in strings. The same applies when more than one translation is required, if there are common strings in two or more of them. For example, specifying the translation ABC to BAB first, and ABD to PQR second, would result in xxxABCDxxx ending up as xxxBPQRxxx. The program searches through the file from the start, making translations sequentially, then repeats the process for any further translate instructions. The "Translate to" string will always be inserted exactly as typed-in.

Name changing

Would you want to change the case within a file name? At first sight, you might think not, but there are circumstances in which it would be helpful to do so. You might prefer to see certain features of file names emphasised in a listing, such as having the extensions in capitals and the prefixes in lower case (quicklaser_CONFIGURE, chicago_F87). Sorting on file names will be affected by case, and it might make a subsequent sort more effective if file names were changed beforehand to all-lower or all-upper case. DP gives the example of files named "DOG", "Cat" and "bird", which would be placed in the order Cat-DOG-bird if a standard ascending sort on Ascii characters were carried out

(character codes are in the order $z > a > Z > A$ in the Ascii set). In case making changes to file names worries you, note that there is no apparent reason why the case used in any file name should affect its use in any way.

It may be hard to believe, but there are 16 possible ways of setting file name case with Transfer. The prefix and suffix (extension) parts of file names can be set - separately - to be in all-upper (AAA), all-lower (aaa), or mixed case (Aaa). Because of the Qdos oddity of allowing multiple usage of the underscore within a single file name, there can be problems when performing operations on files, but note that only the group of characters after the last underscore is the extension - "BAS" is the extension in Turbo_Config.BAS, and "_Config" is part of the prefix. Any odd files that you do not want treated in the same way as the others can be excluded during the course of the case-changing routine.

Sorting

The options offered are (by) Name, Extension, Length, name Length, Update date, Type, dataSpace, and Not sorted. When one sort has been completed, you are offered the chance to have another done, to further refine the process. Each sort can be in either ascending or descending order.

As noted above, it is desirable to consider changing file name case, to make the format of all names consistent, before doing a sort on Name. This applies with both prefix and suffix. Length refers to the number of bytes occupied by a file, name Length refers to the number of

characters in the file name itself. The Update date is when the file was last altered, Type refers to the two standard Qdos file types (1 for executable files, 0 for all others), and dataSpace is the memory area reserved by some executable files for working on data (the value is assumed zero for all non-executable files).

Multiple sorts are of considerable interest, and the instructions devote over a page to example sorts. As is pointed out, a second sort does not necessarily upset the order obtained from the first sort, and it is possible to sort according to different criteria on successive passes and obtain a multiply-ordered set of files. You could, for instance, change the case of file prefixes to upper, do an ascending alphabetic sort on file name, and a descending sort on file length, to get files of similar names grouped in inverse order by length. In doing such operations, you need to give thought to which order to do the sorts in, however. The examples show how carrying out sorts in the wrong sequence can produce results quite different from what is desired. There is a SuperBasic file on the supplied disk which will create a test disk to be used for experimenting with Transfer. As can be seen from the second screen shot, the file names on this disk are a trifle unusual! The upper part of the illustration shows the files on the supplied program disk, the contents of the test disk being in the lower part.

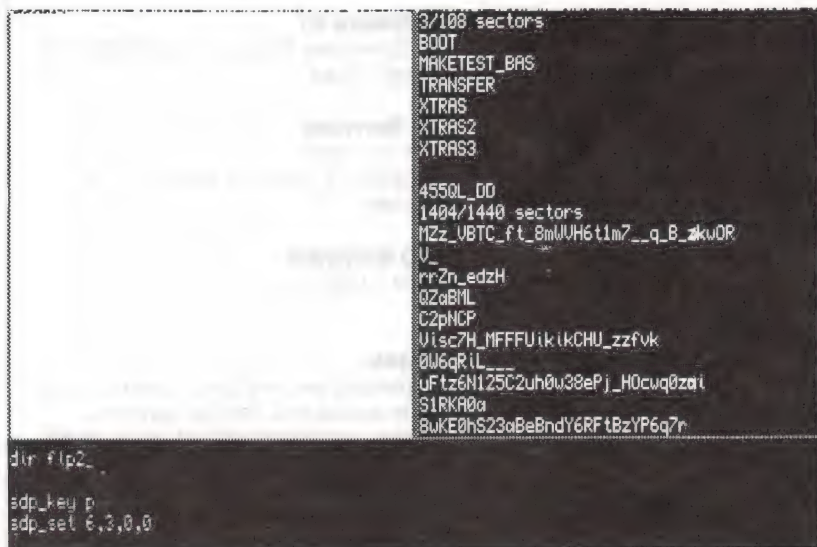
Sorting by file size is interesting, and can be useful too. A file on a disk that was copied during the review turned out to be of zero bytes length, which answered a long-standing question about why text87 Plus4 had been in the habit of saying

one of its found files was corrupt, during start-up. It is not too difficult to lose track of what is on a much-used disk, especially if it is an extra-density one, as in this case. Transfer Utility might be used here to create a replacement disk, on which the files are all in a specified order, to make it much easier to spot particular files in a directory listing

Options

Throughout the on-screen prompts, default values can be accepted by pressing the Enter key, and the usual Y/N/A/Q (yes, no, all, quit) options are offered to allow selection. Once all your requirements have been specified, a final press of the Enter key starts the action. Each operation is tackled separately - once translates have been done, and the case of file names has been set, the first sort is performed, then the second and so on, with the actual copying being the final stage. You have one more choice, or set of choices, to make before copying starts. The first file to be processed brings up the message "Transfer file_name? (Y/C/N/A/Q)" - slightly different from the usual form, in having a C. This stands for Change and allows you to manually change the file name, of this particular file. Pressing Y, N or C permits you to make individual decisions on files as their turns come for processing; Q aborts the transfer process, A sets it to go through all the files without further interference from you. The overall process takes little time, even with a well-filled ED disk as the source (the review system had a Gold Card, though).

Transfer Utility Special Edition works well, and provides an interesting view of your files. It is without frills, which is as it should be for a "utility". No significant problems occurred with it during the review period; one stoppage occurred when the destination device became full, and the usual Turbo message "Task halted...drive full" appeared (Transfer apparently does not look to see if there is sufficient space available for transfers). One of the features that makes this program more than just a copying tool is the commentary that is presented on the screen as the transfer process is carried out. It is educational for the average user. As each file is copied, its (new) name is written to the screen, together with the file length, dataspace (if any), and number of translations (if any) carried out within it. One tends to ignore what is accumulating on disks - Transfer reminds you what you have got, and what it all is



▶ I a N c S c T e A s N s T

HARDWARE

Care Electronics

0923 672102

Tebby connection but no longer dealing directly.

CL Systems

081 459 1351

Real Time Digitizer

Computer Technik

(Jurgen Falkenburg)

010 49 7231 81058

(Germany)

Hard disk interface, hard disk systems, tower housings for QL systems.

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(DJC)

0248 354023

Process controller, Power regularot, network prover.

Miracle Systems

0904 423986

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SOFTWARE

Athene Consultants

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ARK Distribution

0983 79496

Archivist, Master Spy, Spy.

CGH Services

(Richard Alexander)

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(Switzerland)

QTop, Atari QL emulator, Thor support

Deltasoft

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FlightDeck, Image D, AMD Airplan

Digital Precision

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DJW Software

0256 881701

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Discover, Textidy, QL-PC Fileserver, Fleet Tactical Command, Basic Reporter, QLiberator, Filemaster, The Gopher, The Painter, Flashback, DataDesign, QPAC2 and other Pointer Environment programs, others.

DI-Ren

081 291 3751

Fleet Tactical Command

(Dist. by Dilwyn Jones)

Ergon Developments

(Davide Santachiaro)

010 39 342 492323

(Italy)

ZM-X ZX Spectrum emulator, Open World, other QL software.

Jochen Merz Software

010 49 203501274

(Germany)

QL/Atari emulators, QSpread, File Finder, QPTR Pointer Environment Toolkit and other PE programs, QDesign 2, various games, and others.

Lear Data Systems

6 Southview Green, Bentley, Ipswich,

Suffolk IP9 2DR.

PCB-CAD

Liberation Software

081 546 7795

QLib Basic compiler and utilities.

(Dist. by Dilwyn Jones.)

Pointer Products

0258 455117

Pointer Environment programs

Progs (Van Auwera)

010 32 16 48 8952

(Belgium)

The Painter, The Clipart, DataDesign,

QRactal, and others

(Dist. by Dilwyn Jones)

Qubbesoft PD

0376 347852

QL Home Finance, Public Domain software.

SD Microsystems

0462 422897

General Ledger, Small Traders' Pack/Invoicer and Stock Accounting. Other business software.

SJPD Software

0282 51854

Public Domain software

Software 87

33 Savernake Road, London NW3 2JU.

Text87 Plus4

TF Services

071 724 9053

Qualsoft QL Terminal Emulator, File Transfer.

WD Software

0534 81392

Notes:

Addresses are only given where there is no business line. For Fax numbers, phone dealer or check ad. in QL World. Only larger dealers have Fax, often on the same number. Some numbers no longer active in the QL world are given for reference and support queries.

JDIR

Bryan Davies pages his DIR with a new utility.

INFORMATION

Program: JDIR

Price: £10 (no credit card sales)

Supplier: J J Haftke, 7 Lansdown Road, Sidcup, Kent DA14 4EF. Tel.

081 302 6154.

There are now so many extensions to the basic QL set of commands that an outsider could feel the original operating system must have been sadly deficient. When you look through a list of these extra items, though, you might be hard put to identify many that you actually use. Quite a number of them are there for the convenience of application programs and will not be used directly from the command line. The extra commands you use regularly yourself may well be few - WCOPY, PROG_USE, EX, EW, etc.

acceptable, but the command structure is not set up that way. JDIR is an alternative directory-listing command, and a very handy one. Any enthusiastic computer user comes across dozens of programs, and discards many of them after a cursory investigation, but JDIR is one of the few which you might want to keep around. Too many of the programs we see are not good enough for long-term use, but cost £20 or more, which is serious money to waste for anyone living on a small pension. At £10, JDIR is in the

CALL sequence, from a boot file. The necessary SuperBasic lines can be incorporated into an existing boot file. Because of the shortage of microdrive cartridges these days, anyone wanting JDIR on cartridge will have to request it as a special order (and may have to supply the cartridge, presumably). One drawback is that the extensions loaded to make the new directory command usable take up about 18 KB of ram. The QLiberator compiler was used in the creation of the command package, and both the QLIB_EXT and QLIB_RUN files are utilised.

Memory

The total memory used is quoted as about 30 KB plus 50 bytes per file in the directory; that is, about 40 KB for a directory of 200 files. Free memory is displayed on an indicator at bottom right of the JDIR screen. A Quill _doc file gives five pages of instructions and notes, which are quite adequate to use the command, and give some useful advice.

One limitation, which will not

screen directory A look at the simple list of its advantages given below, should be sufficient to recommend the product:

Medium name, free/total sector counts, and total number of files, are displayed at the top of every screen page.

Files are listed in static pages - no scrolling.

Screens can be paged backwards and forwards with Ctrl-up/down.

Up to 76 file names, in 4 columns, per screen page.

Display Stays

The directory display remains on the screen after you exit JDIR, making file names available on-screen for subsequent typing-in.

When TK2 is active, selective directories can be displayed - eg flp2_.ext will display only those file names having the suffix _ext.

The print function gives up to 240 file names per A4 page (saving a great deal of paper, compared to doing screen dumps of the lists produced by the basic DIR command).

Output is selectable to screen, SER1, SER2, PAR, or device (mdv, flp, ram, NET etc.).

The JDIR command stays resident once loaded, until the QL is reset. It can be used from the SuperBasic command line, or in a program.

Free system memory is displayed on the directory screen.

Does it conflict with anything else? The only problem noted on the review system was hanging-up during the CALL phase of booting-up, with one version only, and this has been fixed. There has been a string of versions during the past few months, as (worthwhile) detail changes were made. One obvious feature lost along the way is numbering of the listed files; this had to go in order to get the current number of files on the display. Showing four columns of file names also meant limiting the name length, and the maximum displayed is 20 characters; anything beyond 20 is displayed as the first 19 plus a single full stop at the end of the name. While some improvement on DIR was made in the Trump/Gold Card rom, that was not a serious attempt at fixing the weaknesses; JDIR is much more comprehensive. The acid test is whether or not it will stay on one's boot disk for the next year or so, and my feeling is that the answer is "yes" in my case.

```
1993 Feb 02 12:09:01 19380/84348 sectors caps off / memory = 1484800
boot CLONE_BAS WINGUIDE_DOC WIN_REXT
sub_bin wd_bin dirbackup filemap
treemap Config Read_Me lng_TEXT_ext
lng_GRAF_ext lng_MATH_ext XTRAS PF
CALL_BUG_FIX dir_HELP BACKUP qz_panel
qz_task PFT87 bootN FAB
fiveAb bootQ qtyp qtyp_ded
qtyp_ded_help qtyp_dictionary qtyp_file qtyp_spell
clone_winBack AP_task Alarm Calculator
Calendar capsclock clock Copys_bas
gprint_pct Hot_max Ftr_gen QPac2
ramprt sysmon temp_clock TURBO_TK_CODE
Typer uman Extras PA_task
readme1_doc Readme2_doc boot_traqz Runtime_exts
traqz_task boot_qz HARDBACK boot_Config
boot_conqueror CONQUEROR CONFIGURE Su
Files abacus lng_FONT_ext Editor ->
MSDOS ak_demo_bas PFSp bootN_TC
Configure_cfg COMPARE ak_dev_bas report_boot

PRESS DOWN/UP ARROW KEY FOR NEXT/PREVIOUS PAGE OF DIRECTORY, OR ESC TO QUIT.
```

Of the areas in which the original QL design was clearly lacking, the DIR command is one that probably upsets almost all users. In its original form, it is singularly unhelpful: a fast-scrolling, single-column list of file names which has been and gone before you have time to note more than an odd name. Had some parameters been provided, to allow the file display to be modified, the command could have been made

"sensible" cost range - you have nothing much to lose.

Screen pages

The basic idea of the JDIR command is to deliver a list of files in screen pages, with four columns of up to 19 file names each. The supplied disk contains three separate sets of extensions files, loaded and made active by the usual RESPR, LBYTES and

bother many users, is that JDIR requires a multiple (dynamic) ramdisk facility to be available, such as that provided by the Trump and Gold Cards; the new command makes use of ram7_ for temporary files. You can use a static ramdisk, but that necessitates formatting ram7_ in advance, to a sufficient size for JDIR's temporary files. A TV screen will not display the full directory listing, so a monitor is a "must".

There is no need for a long description of how the "program" works. An illustration of the

QL-HDD-Card Hard disk interface

**Peta Jaeger
packs everything
onto one disk the
only way - with a
hard disk.**

INFORMATION

Products: HDD-Card hard disk interface 259DM; hard disk controller 140 DM; complete 20-MB hard disk system 699 DM; complete 80-MB system 849 DM.

Supplier: Jurgen Falkenburg, Computer Technik, Thanweg 36, D-7539 Ersingen, Germany. Tel. (from UK) 010 49 7231 81058.

UK distributor: W N Richardson & Co. (EEC), 18-21 Misbourne House, Chiltern Hill, Chalfont St. Peter, SL9 9UE. Tel. 0753 888866.

Many of you have the problem that one boot-disk isn't enough if you're working a lot with *Easymenu*, *Quill*, or *Archive*. You usually need at least one disk for data. If you are working with Professional Publisher, you don't need just the boot-disk (which is full anyway) but also one or two disks for the data, one for publisher pages, one for fonts, *Quill_docs*, one for graphics, and so on. Since the QL is a multitasking system, you also get problems if you work with different programs (type into a word processor, switch to *Archive* for an address, use *Qpac2* for looking through your disks, and so on) within one session (and the program you need is always on the other disk!). Another annoying aspect of disks is their access time. If you load *Professional Publisher* from disk you must wait ... This is why I was always looking for a medium with more space than 720 KB.

The Gold Card came to my rescue. It is capable of accessing 3.2 MB disk drives.

But very soon I found out that even 3.2MB isn't enough, since everything I needed, I copied to my boot-disk. It took a fairly long time to structure my large 3.2 MB disk just to cover a standard QL session. It often happened that I needed a program or data which were not on my boot-disk. There I go again, changing disks. The access time of the ED-disks is absolutely sufficient for QL programs. Loading or saving programs on 3.2 MB disks take no longer than 10 seconds (including Professional Publisher with all fonts). *Quill* and *Archive* load in less than a second.

Hard disks

Now let me tell you something about hard disks. For the folks who are not interested in the details, here is my opinion: go ahead and get one, it's worth the money.

If you want to connect the hard disk to your QL you need:

1. a QL
2. a hard disk interface such as the QL-HDD-Card from Jurgen Falkenburg
3. a memory card (Gold Card is best)
4. an adapter (to connect the interface with the QL)
5. a hard disk controller (Omti or Western Digital type for the HDD interface)
6. a compatible hard disk, as big as possible (MFM or RLL type in this case)
7. a power supply for the hard disk
8. a backup program

1 and 3 on this list are absolutely necessary. The interface is physically about 5 x 5 inches and cannot be push-fitted to the QL. Also, it does not have a through-connector (that's why you need number 4, the adapter). The interface is designed mainly for people who

have put their QL into a bigger box (a PC housing, for example). That's why you get different adapters for your QL. Jurgen Falkenburg should have one which fits inside your housing. The QL-BUS-Expander is a good choice, since it is inexpensive and has two slots, so is suitable for use with the Gold Card. The BUS-Driver-Card is interesting if you do not have a Gold Card and want to use other expansion cards like the ROM-card, Eprommer, or any card which uses the expansion slot. If you are using the QL-BUS-Expander, just put your memory-card in the first and the interface in the second slot. There should be no problems.

Installation

Now for the tricky part. The hard disk must be connected to the controller which must be connected to the interface. The controller fits into the interface at a 90 degrees angle towards the interface. I had to buy the additional angle adapter, so that controller and interface face each other. Now all three cards are parallel. One drawback is that the interface is not the same size as the controller, so you can't screw them together. But the connectors fit tightly together, so it is not that bad. The hard disk is connected to the controller by two cables which you usually get together with the drive. The proper connection are very well described in the manual of the hard disk interface.

You can use MFM- or RLL-type hard disks with suitable controllers. Hard disks need more power than floppy drives. They also need 12 VDC and can consume a lot of current. That's why you need number 5, the power supply. Modern hard disks need just 10 watts or less, so try to get the newest one you can lay your hands on. You

should also look out for 3.5in drives, as they need less power, space and usually are quieter.

The whole process of installation isn't for the faint-hearted, but is easy for those who have already rebuilt their QL. If you can't handle this electronics stuff you can get a 'ready to go' hard disk (from Falkenburg or elsewhere) which comes complete with housing and power supply. After installation you can switch your QL on and use the hard disk! But first of all you should format the drive, and find a free address slot for the HDD-card which is compatible with the Gold Card or other memory-cards. Those who own a Gold Card have no choice but to switch to address 49152 (which is the rom port). This procedure is very well explained in the manual. But anyone who owns an old Gold Card (with the yellow PCB) must switch to address 835584 since address lines A18 and A19 are not grounded on older Gold Cards. To find out if the chosen address is correct or not, simply run this Basic program:

```
PRINT  
PEEK_W(addr),PEEK_W(addr+2)
```

If this line gives back 19195 and 1, the address is already used. You will find a table with possible addresses for common memory-cards in the manual, which is 10 pages thick and A5 in format. All other technical details are explained there, so I won't discuss them here any further.

All Gold Card owners must also remove the 68008 main processor, otherwise the Gold Card crashes. This is no drawback since you don't need the 68008 with the Gold Card anyway. After the reset you'll find a copyright message and the size of your hard disk if the drive is formatted; otherwise you'll see "0 MB".

Formatting

The next step is formatting. You will need to know certain technical details about your drive, which should be in the instructions or handbook for whichever drive you have bought. If you enter them, they also serve as a formatting protection. You can't format the hard disk before you have entered the parameters with the WIN_FORMAT command. The parameters you must enter are interleave-factor, size of the clusters, sectors, heads, tracks, precompensation start cylinder, and reduced write-currency start cylinder. Usually you won't be able to establish the last two numbers but fortunately you can set them to zero.

The interleave factor is the sector offset and is an important part concerning the speed of the hard disk. With the Gold Card you can set the interleave to one, (if your controller can make it) so you can get a transfer rates of up to 500 KByte per second. Cluster size is the smallest area which a file occupies on the hard disk (in sectors of 512 bytes). Greater values save memory, but files use more space on the disk. Under 40 MB you should set cluster to four; if you have a bigger hard disk, to eight. It is important not to exceed 65536 clusters. The number of sectors is always 17 with MFM-Disks and 26 with RLL-Disks. Number of heads is the next value which you must enter. After that you must enter the number of tracks and the aforementioned precompensation and reduced write-currency start cylinder. Here comes an example for my Seagate MFM 40MB disk (with Gold Card):

```
WIN_FORMAT
1,4,17,5,976,300,0
```

The number of tracks is often given as the absolute number of tracks, for example 977 cylinders with my Seagate. WIN_FORMAT wants to know the last number from zero on, which is 976 in this case. Now you are ready to format the disk, just as you did with floppy disks before:

```
FORMAT win1_NAME
```

This will take some time (depending on the size of your

hard disk). With four heads it'll take about one minute for each 150 tracks. After completed format the number of all formatted and good clusters will appear. The hard disk is now operating. After RESET you'll find the size of your hard disk just next to the copyright message (in my example I get '40MB'). If you press F1/F2 the system will try to boot from hard disk. If you put a BOOT-DISK in flp1 it will not boot from it until you put the following line in your hard disk boot file:

```
100 IF NOT
FTEST(flfp1_BOOT):LRUN
flp1_BOOT
```

(If you are using Toolkit 2) Minerva users will find out, that because Minerva resets so fast the hard disk driver can't find the hard disk, as the hard disk itself needs a few seconds to power up. This is even worse with Minerva MkII, where you can switch off the memory checking! What you have to do is to wait 2 to 3 seconds and press Alt-Ctrl-Shift-Tab for reboot. This is very tiresome if you want Minerva to reboot automatically while you are not in the same room. I hope this will be fixed in future drivers. (Version 3.07 and above will wait longer for slow hard disks to catch up, says Jurgen.)

Loading

Loading speed is very fast. There is no program on the QL which doesn't load within 3 seconds. Ninety-nine percent of them load within fractions of a second. 40 MB is sufficient for most users if you don't put a large MS-DOS partition on the disk. If you plan to do this, it is wiser to buy a bigger hard disk. The HDD-Card supports hard disks of every size, but disks over 40 MB are harder to get and very expensive.

If you have such a large disk, you must start using subdirectories extensively, but (as Bryan Davies often says) this is a real pain because Qdos allows only 36 characters per filename, and subdirectory names are part of the filenames. If you want to use meaningful filenames and subdirectory names, you are limited to about three levels of subdirectories. For example, if you want to create a subdirectory with the name WORDPROC (short for word

processing) and three more in the next level for QUILL, TEXT91 and PERFECTION with extra subdirectories for TEXT and FONTS you must abbreviate, or put a lot of files within one directory. The last solution isn't something you should do, since you won't find your important files easily if you look for them in a directory with 100 files or more. Some examples:

```
MAKE_DIR WORDPROC_
MAKE_DIR
WORDPROC_QUILL_
MAKE_DIR
WORDPROC_PERFECT_
MAKE_DIR
WORDPROC_TEXT91_
MAKE_DIR
WORDPROC_QUILL_TEXTS_
MAKE_DIR
WORDPROC_PERFECT_TEXTS_
```

In the last example you can see that there are just 13 characters left for the filename of the texts, which are effectively just 9 characters, since you usually have a three character extension (such as .doc in QUILL). This problem will stay with us for a long time, since this isn't caused by the operating system or the level-2 filing hard disk driver, but of Tony's level 2 filing system. Let's hope there will be better level-3 drivers in the near future. There are all standard level-2 commands (as used by the Gold Card) within the driver software which I list here:

```
MAKE_DIR - create a
subdirectory
SET_FBKDT - set the backup-
Date
SET_FVERS - set the version
number
w=MAKE_DIR - like
MAKE_DIR but returns an error
code
w=FBKDT - like SET_FBKDT
but returns an error code
w=FVERS - like SET_FVERS
but returns an error code
```

The exact syntax and function of the commands are explained in the manual. There is also a possibility of direct sector editing in the same way as there is with floppy disks, for example:

```
OPEN #channel,"win1_*D2D"
GET #channel$sectorno, a$
CLOSE #channel
```

The cost of the system is very important to most of QL users.

The hard disk card (HDD-CARD) costs 259 DM (There are 2.38 DM to the pound sterling as we write. Check with your bank or the City pages of your daily paper for a current comparison), and you also need a suitable controller at 140 DM, and a hard disk. You can get second-hand hard disks quite cheap, since a lot of MS-DOS users switch to AT BUS disks. A 40-MB disk costs up to 300 DM. A complete system with a 20 MB hard disk, case and power supply costs 699 DM from Jurgen Falkenberg, 549 DM without case and power supply. A 80-MB Set may be supplied at 849 DM.

This system is primarily designed for QL users who have their QL built into a PC-housing, or are planning to do so (which is a speciality of Jurgen's). Falkenberg also supplies quite a nice mini-tower housing for the QL. For those who have a lot of data to handle, something like the HDD-Card is a must. The MS-DOS emulator *Conqueror* works very well with the hard disk and brings an extra speed increase, since a lot of DOS software depends on a fast hard disk. I couldn't find any severe problems with QL software which doesn't run from hard disk nor could I find any hardware problems. The combination of QL, HDD-Card, and Gold Card has been working fine for more than eight months with my system, though my QL still operates with the normal QL power supply. My opinion: Very good.

Falkenberg produces an information leaflet on the QL-HDD-Card and its supporting boards, which is informative but assumes a certain knowledge of hard disks. The Falkenberg interface, and the systems he supplies, are designed for use with Omti or Western Digital Winchester disk controllers, and MFM or RLL type hard disks. These are widely used standard types, but if you are hoping to set up a QL hard disk system using the QL-HDD-Card, check with Jurgen or Bill Richardson that any outside hard disk unit and/or controller you wish to purchase is compatible with their system, and also to make sure you order the correct interface and/or expansion boards.



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